

**BY ORDER OF THE  
SECRETARY OF THE AIR FORCE**

**AIR FORCE INSTRUCTION 13-212, VOLUME 1**

**7 AUGUST 2001**



**AIR FORCE SPACE COMMAND  
Supplement 1**

**3 MAY 2004**

***Space, Missile, Command, And Control***

**RANGE PLANNING AND OPERATIONS**

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

---

**NOTICE:** This publication is available digitally on the AFDPO WWW site at:  
<http://www.e-publishing.af.mil>

---

OPR: HQ USAF/XOOR  
(Lt Col Gerard Madigan/Maj Tim Brown)  
Supersedes AFI 13-212, Volume 1, 28 Jul 1994

Certified by: HQ USAF/XOO  
(Maj Gen Walter E. Buchanan III)  
Pages: 84  
Distribution: F

---

This instruction, in conjunction with AFI 13-201, *Air Force Airspace Management*, implements AFD 13-2, *Air Traffic Control, Airspace, Airfield, and Range Management*. It applies to all Air Force, Air National Guard (ANG), and Air Force Reserve Command (AFRC) Range Operating Agencies (ROA). It provides guidance for the planning, operations, management, safety, equipment, facilities, and security of Air Force ranges. AFI 13-212 is in three volumes: Volume 1, *Range Planning and Operations*; Volume 2, *Range Construction and Maintenance*; and Volume 3, *SAFE-RANGE Program Methodology*. Send major command (MAJCOM) supplements to HQ USAF/XOOR, 1480 Air Force Pentagon, Washington, DC 20330-1480, for review. For Major Range and Test Facility Bases (MRTFBs), include an information copy to HQ USAF/TEP, 1530 Air Force Pentagon, Washington, DC 20330-1530. See **Attachment 1** for a Glossary of References and Supporting Information. See **paragraph 1.7.** of this volume for guidance on submitting comments and suggesting improvements to AFI 13-212. This publication is influenced by the Paperwork Reduction Act of 1974 as amended in 1996. Maintain and dispose of records created as a result of processes prescribed in this publication in accordance with AFMAN 37-139, *Records Disposition Schedule*.

---

**(AFSPC)** The OPR for this supplement is XOCD (Maj Derek Cossey. This supplement implements and extends the guidance of **Air Force Instruction (AFI) 13-212, Volume 1, Range Planning and Operations**, 7 Aug 2001, to AFSPC range operations. The AFI is published word-for word without editorial review. **This supplement is new and must be completely reviewed.** The definition of Air Force ranges in AFI 13-212V1 is expanded to include a Space Test and Training Range (STTR). This supplement reflects the establishment, integration, management, and operations of a range for counterspace developers, testers and operators to conduct free-space radiation and other counterspace activities. This supplement provides guidance on roles and responsibilities in the management of the STTR, of the Space Warfare Center (SWC) as the Range Operating Agency (ROA) for the STTR and HQ AFSPC/XO; and provides guidance for STTR responsibilities, safety, equipment, facilities, and security. This supplement

applies to all AFSPC units except those associated with the 30<sup>th</sup> and 45<sup>th</sup> Space Wing's Space Launch and Test Ranges. This publication applies to the Air National Guard (ANG) and the Air Force Reserve Command (AFRC).

### ***SUMMARY OF REVISIONS***

**This document is substantially revised and must be completely reviewed.**

The definition of Air Force ranges in this AFI is expanded to include MRTFBs as described in DoD Directive 3200.11, *Major Range and Test Facility Base (MRTFB)*. This revision of AFI 13-212 reflects a more integrated operational and engineering approach to range management and provides guidance on roles and responsibilities in the management of Air Force range operations. The following changes are added: (1) Provides guidance on Range Planning and Modernization Planning, and identifies the Environmental Protection Agency's (EPA) Military Munitions Rule as the guiding document used to meet EPA regulatory requirements on active and inactive ranges. (2) Places responsibility for Air Force range policy and management under HQ USAF/XOOR. (3) More thoroughly explains the planning and requirements process for new airspace/range initiatives. (4) Provides guidance on range operations, laser operations, night operations/Night Vision Devices (NVDs), range personnel training, and weapon safety footprint/laser safety footprint requirements. (5) Adds policy and planning for Electronic Combat Ranges (ECRs)/Electronic Scoring Sites (ESSs). (6) Establishes a standard definition and reporting requirement for range utilization. (7) Adds Ammunition, Explosives, and other Dangerous Articles (AEDA) provisions, changes residue clearance requirements, and incorporates guidance on the process for evaluating appropriate response actions on closed, transferred, and transferring ranges containing military munitions. (8) Provides policy and procedures for use of "Depleted Uranium".

<b>Chapter 1—GENERAL CONCEPTS</b>	<b>6</b>
1.1. Purpose. ....	6
1.2. Description of Ranges. ....	6
1.3. Operations and Range Classifications. ....	7
1.3. (AFSPC) Operations and Range Classifications. ....	7
1.4. Environmental Stewardship - Range Planning. ....	9
1.5. Modernization Planning. ....	10
1.6. Exemptions and Waivers to AFI 13-212. ....	10
1.7. Volume Changes. ....	11
1.7. (AFSPC) Volume Changes. ....	11
<b>Chapter 2—RESPONSIBILITIES</b>	<b>12</b>
2.1. Headquarters, United States Air Force. ....	12
2.2. Headquarters, United States Air Force, Ranges and Airspace Division (HQ USAF/XOOR) Responsibilities. ....	12

2.3.	Headquarters, United States Air Force, Directorate of Test and Evaluation (HQ USAF/TE) Responsibilities. ....	12
2.4.	Headquarters, United States Air Force, Test Policy and Programs Division (HQ USAF/TEP) Responsibilities. ....	13
2.5.	Headquarters, United States Air Force, Test Resources and Infrastructure Division (HQ USAF/TER) Responsibilities. ....	13
2.6.	MAJCOM Responsibilities. ....	14
2.7.	Range Operating Agency (ROA) Responsibilities. ....	15
2.8.	Wing/Center Safety Responsibilities. ....	19
2.9.	Range Safety Personnel Responsibilities. ....	20
2.10.	National, Regional, and Local Range and Airspace Meetings. ....	20

### **Chapter 3—PLANNING FOR RANGES** **21**

3.1.	Planning for Ranges. ....	21
3.1.	(AFSPC) Planning for Ranges. ....	21
3.2.	Preliminary Review Process. ....	21
3.3.	Develop Description of Proposed Actions and Alternatives (DOPAA). ....	22
3.4.	Airspace Establishment and Land Acquisition. ....	27
3.5.	Combat Training Range (CTR) Executive Reviews. ....	28
3.6.	Test Investment Planning and Programming (TIPP) Process. ....	29
3.7.	Inputs to the Unit Comprehensive Range Plan. ....	29
3.7.	(AFSPC) Inputs to the Unit Comprehensive Range Plan. ....	30

### **Chapter 4—RANGE OPERATIONS, RANGE PERSONNEL TRAINING, AND RANGE SAFETY** **32**

4.1.	Range Operations. ....	32
4.2.	Range Personnel and Training. ....	38
4.3.	Range Safety. ....	39
4.3.	(AFSPC) Range Safety. ....	39

### **Chapter 5—ELECTRONIC COMBAT TRAINING OPERATIONS** **45**

5.1.	Electronic Combat Training Operations. ....	45
5.2.	Electronic Combat Equipment Management. ....	46
5.3.	Radio Frequency Spectrum Issues. ....	46
5.3.	(AFSPC) Radio Frequency Spectrum Issues. ....	47

5.4.	Electronic Warfare Product Improvement Working Group (EW PIWG). .....	47
5.5.	Conduct of Electronic Attack and Chaff Procedures. ....	47
5.5.	(AFSPC) Conduct of Electronic Attack and Chaff Procedures. ....	47
5.6.	Scheduling. ....	47
5.7.	Electronic Scoring Site Activity. ....	47
<b>Chapter 6—</b>	<b>REPORTING REQUIREMENTS</b>	<b>48</b>
6.1.	Reporting Requirements. ....	48
6.2.	Range Utilization Report. ....	48
6.3.	Expended Munitions Tracking Report. ....	48
6.4.	Range Residue Clearance/Decontamination Report. ....	49
6.5.	RAMPOD Configuration Management System. ....	49
<b>Chapter 7—</b>	<b>RANGE MAINTENANCE; AMMUNITION, EXPLOSIVES, AND OTHER DANGEROUS ARTICLES (AEDA)/RANGE RESIDUE CLEARANCE/ DECONTAMINATION; AND CLOSING OR TRANSFERRING OF AIR FORCE RANGES</b>	<b>51</b>
7.1.	Range Maintenance. ....	51
7.2.	Ammunition, Explosives, and Other Dangerous Articles (AEDA)/Range Residue Clearance/Decontamination Responsibility. Each MAJCOM/RO .....	51
7.3.	AEDA/Range Residue Clearance/Decontamination. ....	51
7.4.	AEDA/Range Residue Clearance Types and Requirements. ....	53
7.5.	Closing or Transferring of Ranges. ....	54
7.6.	Ensuring Safety. ....	55
<b>Chapter 8—</b>	<b>TEST AND TRAINING USE OF DEPLETED URANIUM</b>	<b>58</b>
8.1.	Policy and Procedures for Use of Depleted Uranium. ....	58
8.2.	Responsibilities. ....	58
8.3.	Authorized Locations. ....	58
8.4.	Disposal/Decommission Procedures. ....	59
<b>Attachment 1—</b>	<b>GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION</b>	<b>60</b>
<b>Attachment 1— (AFSPC)</b>	<b>GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION</b>	<b>76</b>
<b>Attachment 2—</b>	<b>RANGE PERSONNEL TRAINING</b>	<b>77</b>

<b>AFI13-212V1_AFSPCSUP1_I 3 MAY 2004</b>	<b>5</b>
<b>Attachment 3—RANGE UTILIZATION REPORT</b>	<b>81</b>
<b>Attachment 4— (Added-AFSPC) RANGE OPERATIONS OFFICER (ROO) DUTIES AND QUALIFICATIONS</b>	<b>84</b>

## Chapter 1

### GENERAL CONCEPTS

**1.1. Purpose.** This instruction defines Air Force requirements and responsibilities to manage Air Force ranges. It provides the guidance to implement the policies that govern the use of Air Force ranges and the framework by which commanders can safely, effectively, and efficiently operate their ranges. These policies support the goal of balancing the need to accomplish realistic testing and training with the need to minimize potential impacts of such activities on the environment and the surrounding communities.

**1.2. Description of Ranges.** A range is any land mass or water body, with the associated Special Use Airspace (SUA). A range is a designated area established to conduct operations, training, research and development, and test or evaluation of military hardware, personnel, tactics, munitions, explosives, or Electronic Combat (EC) systems. Range capabilities and services vary and are dependent upon test and training requirements delineated by the MAJCOMs.

1.2.1. Primary Training Range (PTR). PTRs usually accommodate basic to intermediate air-to-surface training. Primary Training Ranges (PTR) normally consist of land of a limited size, approximately 5000-100,000 acres. Typical PTRs contain target arrays, threat simulators, and weapons scoring systems and provide Service Class A, B, and/or C range capabilities. (See **paragraph 1.3.5.** ). PTRs normally support the training requirements of a specific unit and are in close geographic proximity to their primary users.

1.2.2. Major Range and Test Facility Base (MRTFB). DoD Directive 3200.11, *Major Range and Test Facility Base (MRTFB)*, establishes the policy and responsibilities for the management and operation of specific DoD T&E activities (collectively referred to as the MRTFB). The MRTFB is part of the National Test Facilities Base. MRTFBs are national assets that exist primarily to provide T&E information to DoD decision-makers and to support the T&E needs of DoD research programs and weapon system development programs. MRTFBs also support DoD's training needs. The Air Force Air Warfare Center (Nellis AFB), the Air Force Air Armament Center (Eglin AFB), and the Utah Test and Training Range (UTTR) also serve as dual test/training MRTFBs. Other U.S. government agencies (federal, state, local, and tribal), allied foreign governments, and defense contractors may use MRTFBs. Private organizations and commercial enterprises may also use MRTFBs if authorized. MRTFB commanders will ensure that they are not competing with U.S. private industry in providing services to commercial or non-DoD government users. Use of these facilities by private organizations and commercial enterprises should not increase DoD's cost to operate MRTFBs, and should not be factored into the decision-making process for sizing, operating, and maintaining the T&E infrastructure.

1.2.3. (Added-AFSPC) Space Test and Training Range (STTR). The STTR is a primary training range (PTR), an Electronic Combat Range (ECR) and a test facility. Test and training space for the STTR includes air, land and sea space as well as those areas outside the atmosphere where space operations are conducted. The STTR provides a capability to test developmental and operational space systems and to train space operations crews of all services in a real world environment. This range provides an environment that can be controlled and analyzed to test and train space systems and associated personnel. This environment will be used to validate space operations under valid threat conditions and to support testing, training, and exercising of systems and units individually and within large

force exercises. The STTR is initially focused on the counterspace function and will expand as appropriate to other space mission areas in the future.

**1.3. Operations and Range Classifications.** Range operations require that the surface area (land or sea) encompassing the weapon safety footprints or surface area underlying the air-to-air range be protected by purchase, lease, or other restriction to ensure the safety of personnel, structures, and the public from expended rockets, missiles, or target debris. The Range Operating Agency (ROA) will perform a risk assessment and establish mission parameters to minimize potential safety hazards associated with weapons employment. The ROA will assess the weapon safety footprints against each intended target to ensure new weapons, platforms, and/or tactics can be employed safely before actual use on a range. In no case employ actual weapons outside DoD SUA specifically authorized for the employment activity. When the employment envelope of the weapon is outside the rangeland, the ROA will perform a risk assessment and ensure public notification of the activity. The ROA will conduct a risk assessment for launching off-range onto targets on the range, and will ensure safety mechanisms are in place to avoid off-range impacts.

**1.3. (AFSPC) Operations and Range Classifications.** The Space Warfare Center (SWC) is designated as the Range Operating Agency (ROA) for the STTR. The SWC/CC may delegate the ROA responsibilities no lower than the space group commander (SG/CC). SWC/CC shall submit a memorandum that documents the name and duty title of the ROA within 30 days of designating an ROA other than the SWC/CC to HQ AFSPC/XOC.

1.3.1. Air-to-Surface. Air-to-Surface operations cover a wide range of mission requirements. Ranges that support, for example, complex multi-aircraft operations, air-to-surface missiles, aeronautical system testing, unmanned vehicles, and cruise missiles require a substantial amount of range space and a sophisticated range infrastructure. This infrastructure may include high fidelity threat simulators, visual threat simulators, scoring capabilities, realistic surface attack target arrays, command and control systems, communication networks, data display/processing capabilities, instrumentation/debrief systems, flight termination systems, and flight hazard analysis/impact prediction capability.

1.3.2. Electronic Combat Range (ECR)/Electronic Scoring Site (ESS). ECRs/ESSs provide a simulated electronic threat environment for aircrew combat training. ECR/ESS facilities and equipment can be located at air-to-air or air-to-surface ranges, in or near a Military Training Route (MTR) or a Military Operations Area (MOA), or outside of USAF ranges and SUA.

1.3.3. Surface-to-Air. Surface-to-Air operations cover a wide range of mission requirements. Ranges that support, for example, endo- exoatmospheric missile intercepts, aeronautical system testing, and ballistic missiles require a substantial amount of range space and a sophisticated range infrastructure. This infrastructure may include high fidelity simulators, visual simulators, end-game scoring capabilities, command and control systems, communication networks, data display/processing capabilities, instrumentation systems, flight termination systems, and flight hazard analysis/impact prediction capability.

1.3.4. Air-to-Air. Air-to-Air operations cover a wide range of mission requirements. Ranges that support, for example, air-to-air operations involving simulated and actual employment of missiles, air-to-air gunnery, aeronautical system testing, unmanned vehicles, and Electronic Combat require a substantial amount of range space and a sophisticated range infrastructure. This infrastructure may include high fidelity simulators, visual simulators, end-game scoring capabilities, command and con-

trol systems, communication networks, data display/processing capabilities, instrumentation systems, flight termination systems, and flight hazard analysis/impact prediction capability.

1.3.4.1. Air Combat Training System (ACTS). ACTS ranges are specially instrumented air-to-air ranges that provide unique capabilities to observe activities real-time and/or record these activities for aircrew feedback.

1.3.4.1.1. Ground-based Flight Instrumentation Range Systems. These systems provide weapon simulations, Time-Space-Position-Information (TSPI), and aircrew kill notification in near-real time using ground based towers and communications relays. Ground-based computers use weapons simulation fly-out models to determine air-to-air kill probabilities. The Range Training Officer (RTO) relays the kill notification.

1.3.4.1.2. Rangeless/Untethered Flight Instrumentation Range Systems. Rangeless/untethered systems use pod-to-pod data links and/or onboard recorders carried onboard participating aircraft to compute weapon simulations, and provide kill notification. Air-to-air weapon simulations and real-time kill notification are accomplished by automatically computing weapon simulations and kill probabilities within “smart” flight instrumentation pods. An RTO is not required for kill notification.

1.3.4.2. Live Air-to-Air Gunnery Operations. Air-to-air targets such as towed devices and Aerial Gunnery Target System (AGTS) are used for live air-to-air gunnery operations. The aircraft performance capabilities and the appropriate munitions ballistic tables determine the airspace and surface area required for safe performance.

1.3.4.3. Range Integration Instrumentation System (RIIS). RIIS is a near-real time data acquisition and storage system. RIIS integrates range equipment located at ECRs and ESSs. Data received from range equipment includes, but is not limited to, aircraft position, emitted threats, Electronic Counter-Measures (ECM), and weapon delivery.

1.3.5. Range Classifications/Types of Service. The following are the USAF range classifications:

1.3.5.1. Service Class A. This range is manned, has a ground-based scoring capability, and has a Range Control Officer (RCO) who controls aircraft using the range. Delegation of weapons release authority by the RCO occurs when the RCO can not positively determine aircraft attitude, orientation, etc. (e.g., loss of visual contact, night or high altitude releases, or loss of positional data information from ground-based radar or other instrumentation). However, as long as the RCO is present on the range, the service provided remains Class A. In situations where the RCO delegates safe release of ordnance to a flight lead, individual pilot, Forward Air Controller (FAC), or other briefed person, the RCO maintains overall authority on the range and can deny release clearance or abort the release at any time. If the flight lead, individual pilot, FAC, or other briefed person accepts delegation of weapons release authority from the RCO, they are solely responsible for safe release of ordnance on that pass.

1.3.5.2. Service Class B. This range is manned or unmanned, has a ground-based scoring capability, but does not have an RCO controlling aircraft. The flight lead, individual pilot, FAC, or other briefed person performs the RCO function.

1.3.5.3. Service Class C. This range is unmanned, with no scoring or aircraft control from the ground. The flight lead, individual pilot, FAC, or other briefed person performs the RCO function.



1.3.5.4. Service Class D. This is an instrumented air-to-air range monitored by an RTO. The RTO acts as a training facilitator, ensures all aircraft pods are tracking, and performs real-time kill removal as requested and briefed by the flight lead. Air-to-air training may occur within the SUA without live RTO monitoring if the aircraft can not use ACTS or if the using agency does not request an ACTS debrief.

1.3.6. (Added-AFSPC) Space Test and Training Range. STTR activities will initially incorporate all aspects of counterspace operations to include space situation awareness, defensive counterspace and offensive counterspace. The infrastructure may include high fidelity threat simulators that threaten friendly space vehicles, satellites emulating adversary use of space, adversary command and control systems, space focused command and control systems, integration of space systems into the existing range infrastructure so the effects of counterspace operations are realized during flying/terrestrial/maritime operations, communications networks, data display/processing capabilities, instrumentation/debrief systems, attack termination systems, and risk hazard analysis.

**1.4. Environmental Stewardship - Range Planning.** Air Force range policy centers around balancing three important areas: readiness, environmental responsibility, and public safety. The Air Force has a responsibility to ensure it operates in an environmentally responsible manner while sustaining the highest levels of readiness to meet its mission requirements.

1.4.1. Sustain Readiness. Preserving the long-term environmental vitality of Air Force range assets contributes significantly to readiness. Units will develop and maintain range plans with an Executive Summary of the Comprehensive Range Plan suitable for inclusion in the installation's General Plan to address operational and environmental issues and support current and future test and training mission requirements.

1.4.2. Environmental Responsibility. The second area of emphasis requires close cooperation in environmental matters between the Air Force leadership and other federal, state, local, and tribal government agencies. Integrate natural and cultural resources management into range planning IAW AFI 32-7064, *Integrated Natural Resources Management*, and AFI 32-7065, *Cultural Resources Management*. Willingness to define the purpose and need for Air Force ranges and to describe the importance of the test and training missions enhances credibility and increases public understanding and support. Mitigating adverse impacts from daily operations at active and inactive military ranges is an important part of effective community relations. Coordinate all community actions with the Public Affairs office.

1.4.2.1. Military Munitions Rule. Title 40 Code of Federal Regulations, Part 260, *Military Munitions Rule* regulates activities on active and inactive ranges. MAJCOMs/ROAs will comply with the guidance established in the Environmental Protection Agency's (EPA) Military Munitions Rule to meet EPA regulatory requirements on active and inactive ranges. Ensure environmental management flights are involved in the process.

1.4.2.2. Ammunition, Explosives, and Other Dangerous Articles (AEDA)/Range Residue Clearance/Decontamination. Each MAJCOM/ROA is responsible for AEDA/range residue clearance/decontamination on active and inactive ranges under its control IAW DoD Directive 4715.11, *Environmental and Explosives Safety Management on Department of Defense Active and Inactive Ranges Within the United States* and DoD Directive 4715.12, *Environmental and Explosives Safety Management on Department of Defense Active and Inactive Ranges Outside the United States*. MAJCOMs/ROAs should manage ranges and targets to maintain long-term viability of

DoD ranges while protecting human health and the environment and to minimize future clearance costs. Ranges and munitions should be designed to minimize potential explosive hazards and harmful environmental impacts and to promote resource recovery and recycling.

1.4.3. Public Safety. The Air Force has a responsibility to protect the public to the maximum extent possible from the hazards and effects associated with range operations. This third area of emphasis requires leveraging resources by using new technology. Investment strategies will focus on preventing pollution, eliminating hazards, and reducing costs by using cost benefit and life cycle analysis tools.

**1.5. Modernization Planning.** Modernization Planning, governed by AFRD 10-14, *Modernization Planning*, consists of Mission Area Plans (MAPs) and Mission Support Plans (MSPs). It establishes the process to identify and correct deficiencies in mission and functional areas. The results of these activities will be included in the Comprehensive Range Plan. MAPs/MSPs comprise capability roadmaps outlining a modernization plan to correct task deficiencies. For ranges, they represent an iterative process from the HQ USAF to the local unit level showing in increasing detail how the various levels fulfill range requirements for the Air Force's mission areas. MAJCOMs evaluate Air Force mission areas and functions, pinpoint mission specific deficiencies or cross cutting mission support deficiencies, and develop cost effective, mitigating strategies to overcome the deficiencies to achieve the combat capabilities needed in the future. MAPs/MSPs forecast into the future and provide planning data to USAF's Program Objective Memorandum (POM).

**1.6. Exemptions and Waivers to AFI 13-212.** Requests for exemptions and waivers to this instruction will be clearly defined and will be based on existing critical circumstances involving operations, maintenance, and/or safety issues. Any change in critical circumstances is cause for review of the exemption or waiver. The ROA is responsible for monitoring these circumstances and suspending activities permitted by the exemption or waiver when safety is in question. If safety is not the issue, operations and maintenance activities may continue, pending review of the exemption or waiver, unless the ROA judges them inappropriate. In either case, the ROA must request an immediate review of the exemption or waiver through the corresponding MAJCOM (or equivalent) to HQ USAF/XOOR.

1.6.1. Exemptions. An exemption is a permanent approval for non-compliance with a specific requirement of this instruction. Exemptions will remain in effect for as long as the conditions remain unchanged. ROAs will review exemptions every five years to confirm that conditions have not changed. Generally, an exemption is issued only when it is apparent that conditions can not be alleviated and the Air Force is willing to accept the risk involved.

1.6.2. Waivers. A waiver is temporary and requires a plan to alleviate the condition. It has an expiration date of one year from the approval date or when the condition is alleviated, whichever occurs first.

1.6.3. Request for Exemption or Waiver. A request for exemption or waiver should contain, as a minimum, the following information:

1.6.3.1. Range name and location.

1.6.3.2. ROA and a point-of-contact.

1.6.3.3. Requested exception to AFI 13-212. Reference the specific paragraph.

1.6.3.4. Description of the conditions at issue. Include maps, charts, photos, drawings, and other data to illustrate or define these conditions.

1.6.3.5. Description of potential alternatives and their impact on test and training operations, maintenance, cost, and other factors deemed appropriate by the requesting agency.

1.6.3.6. Description of proposed actions and procedures to mitigate safety or other issues of concern. Include maps, charts, graphics, or other illustrations as appropriate.

1.6.3.7. For waiver requests, propose a plan to alleviate the condition. Include project milestones and any additional information bearing on the issue. Forward requests to MAJCOM for review and coordination.

1.6.4. Exemption or Waiver Coordination and Approval. MAJCOMs will forward requests for exemptions and waivers to this instruction to HQ USAF/XOOR for coordination and approval.

1.6.4. (AFSPC) All requests for waivers/exemptions to AFI 13-212V1 will go from the ROA through HQAFSPC/XOC to HQ USAF/XOO-RA. HQ AFSPC/XOC is the approval authority for ROA requests for waivers/exemptions to AFI 13-212V1\_AFSPC SUP 1.

**1.7. Volume Changes.** Forward recommendations for change to this instruction on AF Form 847, Recommendation for Change of Publication, through channels, to HQ USAF/XOOR, 1480 Air Force Pentagon, Washington, DC 20330-1480.

**1.7. (AFSPC) Volume Changes.** Send comments and suggested improvements to this supplement on AF Form 847, **Recommendation for Change Publication**, through channels, to HQ AFSPC/XOCD, 150 Vandenberg St. Suite 1105, Peterson AFB, CO 80914-4020.

## Chapter 2

### RESPONSIBILITIES

**2.1. Headquarters, United States Air Force.** HQ USAF, Deputy Chief of Staff, Air and Space Operations, through the Director of Operations and Training, has designated the Ranges and Airspace Division (HQ USAF/XOOR) as the focal point for USAF ranges. The Ranges and Airspace Division develops policy, advocates resources, and manages the oversight of Air Force ranges.

**2.2. Headquarters, United States Air Force, Ranges and Airspace Division (HQ USAF/XOOR) Responsibilities.**

2.2.1. Establishes airspace/range policy, programming, and requirements IAW AFD 13-2, *Air Traffic Control, Airspace, Airfield, and Range Management*, AFI 13-201, *Air Force Airspace Management*, and this instruction.

2.2.2. Serves as OPR for the national and regional range and airspace meetings as described in AFI 13-201.

2.2.3. Serves as OPR for Air Force range modernization planning activities and reviews MAJCOM range modernization plans.

2.2.4. Acts as advocate for HQ USAF requirements and funding for Combat Training Range (CTR) programs and equipment (PE#0604735 and PE#0207429).

2.2.5. Sponsors HQ USAF Program Element Monitor (PEM) for Readiness Training Ranges, Operation and Maintenance (PE#0207604).

2.2.6. Sponsors HQ USAF PEM for Air Warfare Center -- Nellis Range Complex (PE#0207428).

2.2.7. Co-chairs the Air Force Ranges Investment Council (AFRIC).

2.2.8. Provides USAF/XO review of all Air Force range related Environmental Impact Analysis Process (EIAP) issues and documents.

2.2.9. Coordinates Congressional inquiries concerning Air Force ranges, including operational and environmental issues.

2.2.10. Interfaces with the Federal Aviation Administration (FAA) on airspace/range policy matters through the FAA Headquarters and Regional representatives.

2.2.11. Maintains/updates USAF sections of FAA Handbooks concerning Air Force ranges.

2.2.12. Serves as the focal point for USAF range policy issues.

2.2.13. Coordinates with other public, private, and tribal interests and agencies as required to support USAF airspace/range requirements.

2.2.14. Oversees policy related to Air Force airspace/range automated data systems including the Military Airspace Management System (MAMS) and other related systems.

2.2.15. Coordinates and approves all exemptions, waivers, and changes to this instruction.

**2.3. Headquarters, United States Air Force, Directorate of Test and Evaluation (HQ USAF/TE) Responsibilities.**

- 2.3.1. Establishes Air Force T&E policy.
- 2.3.2. Determines adequacy of T&E resources required to support weapon system development.
- 2.3.3. Resolves developmental and operational test programmatic issues.
- 2.3.4. Ensures CSAF and SECAF are informed of T&E issues relating to program execution.
- 2.3.5. Final review authority and signatory for TEMP's prior to Air Force Acquisition Executive (AFAE) approval and signature.
- 2.3.6. T&E Representative to the Air Force Requirements Oversight Council (AFROC).
- 2.3.7. Co-chairs the Air Force Ranges Investment Council (AFRIC).

## **2.4. Headquarters, United States Air Force, Test Policy and Programs Division (HQ USAF/TEP) Responsibilities.**

- 2.4.1. Promulgates Air Force T&E policy and is the Air Staff OPR for: AFI 99-1, *Test and Evaluation Process*; AFI 99-101, *Developmental Test and Evaluation*; AFI 99-102, *Operational Test and Evaluation*; AFI 99-105, *Live Fire Test and Evaluation Process*; AFI 99-106, *Joint Test and Evaluation*; AFI 99-108, *Programming and Reporting Missile and Target Expenditures in Test and Evaluation*, RCS: HAF-TEP (SA) 7101; AFMAN 99-104, *Armament-Munitions Test and Evaluation Process*; AFMAN 99-110, *Airframe-Propulsion-Avionics T&E Process*; AFMAN 99-111, *C4I T&E Process*; AFMAN 99-112, *Electronic Warfare (EW) Test and Evaluation Process*; and AFMAN 99-114, *Space Systems T&E Process*.
- 2.4.2. Reviews Mission Need Statements (MNS), Program Management Directives (PMD), Operational Requirements Documents (ORD), and Test and Evaluation Master Plans (TEMP) for proper T&E support and responsibilities.
- 2.4.3. Acts as Air Force OPR for the OSD-sponsored Joint Test and Evaluation (JT&E) Program.
- 2.4.4. Answers congressional inquiries regarding T&E matters.
- 2.4.5. In conjunction with AF/XOOR, approves waivers and exemptions to this instruction regarding T&E matters.

## **2.5. Headquarters, United States Air Force, Test Resources and Infrastructure Division (HQ USAF/TER) Responsibilities.**

- 2.5.1. Oversees the Air Force test infrastructure and ensures adequate facilities are available to support Air Force T&E activities.
- 2.5.2. Formulates the acquisition strategy and overall program plan for T&E resources in conjunction with developing and using commands.
- 2.5.3. Administers the Test Investment Planning and Programming (TIPP) process and Air Force T&E Modernization Planning Process.
- 2.5.4. Serves as OPR for the Air Force T&E Mission Support Plan.
- 2.5.5. Performs all Program Element Monitor (PEM) responsibilities for the following T&E infrastructure and support program elements (PE): Air Force Operational Test and Evaluation Center,

Combat Development, Threat Simulator Development, Major T&E Investment, Initial Operational Test and Evaluation, Test and Evaluation Support, and Base Operations Support.

2.5.6. Promulgates Air Force T&E resources policy and is OPR for AFI 99-109, *Test Resources Planning*.

**2.6. MAJCOM Responsibilities.** All references to MAJCOMs in this instruction include the Air National Guard (ANG), Air Force Reserve Command (AFRC), and other agencies designated as “MAJCOM equivalent” by HQ USAF. The MAJCOM offices (ACC/DOR, AETC/DOFR, AFRC/DOT, AFMC/DOA, AFSOC/DO, AFSPC/DO, AMC/DO, ANG/C4R, PACAF/DOQ, and USAFE/DOT) will:

2.6.1. Supplement this instruction. MAJCOM supplement(s) may be more restrictive than this instruction but will not be less restrictive.

2.6.2. Participate in the national, regional, and local range and airspace meetings as described in AFI 13-201.

2.6.3. Review range related documents contained in the unit Comprehensive Range Plan.

2.6.4. Serves as OPR for the MAJCOM range modernization planning activities and reviews unit range modernization plans.

2.6.5. Provide the necessary procedural guidance to units for the safe conduct of test and training operations on other service/host nation ranges. Such operations will comply with this instruction, MAJCOM supplement(s), and/or host nation agreements as applicable.

2.6.6. Serve as the focal point for procedural issues associated with their ranges.

2.6.7. Coordinate with other public and private interests and agencies as required to support MAJCOM airspace/range requirements.

2.6.8. Oversee MAJCOM airspace/range automated data systems including MAMS and other related systems.

2.6.9. Forward requests for exemptions and waivers to this instruction to HQ USAF/XOOR for coordination and approval.

2.6.10. Update range utilization database.

2.6.11. Designate ROAs.

2.6.12. (Added-AFSPC) HQ AFSPC/XO has oversight responsibility for organizing, training and equipping the STTR.

2.6.12.1. (Added-AFSPC) HQ AFSPC/XO approves all agreements with agencies outside of AFSPC concerning the STTR.

2.6.12.2. (Added-AFSPC) HQ AFSPC/XOC is designated the HQ AFSPC OPR for the STTR. The OPR will perform the following functions.

2.6.12.2.1. (Added-AFSPC) Provide policy and guidance for STTR related issues.

2.6.12.2.1.1. (Added-AFSPC) Identify program security requirements for the STTR.

2.6.12.2.2. (Added-AFSPC) Advocate all STTR Program Objective Memorandum (POM) activities.

2.6.12.2.3. (Added-AFSPC) Negotiate required Memorandum of Understanding (MOU) with other commands for integrated operations on and/or support from their ranges.

2.6.12.2.4. (Added-AFSPC) Coordinate all agreements with agencies outside of AFSPC concerning the STTR.

2.6.12.2.5. (Added-AFSPC) Set priorities for range usage and provide this guidance to the ROA.

2.6.12.2.6. (Added-AFSPC) In conjunction with HQ AFSPC/INX and INF, provide liaison between AFSPC and intelligence agencies for the acquisition and beddown of threat systems, where appropriate. HQ AFSPC/INX and INF will coordinate with intelligence agencies to ensure the proposed threat systems represent valid threats and are appropriate to the planned scenarios. HQ AFSPC/XOC will coordinate and approve requests for Space Range threat equipment and additions to the STTR inventory.

2.6.12.2.7. (Added-AFSPC) HQ AFSPC/XOCD will conduct detailed staff assistance visits to the STTR and its Operating Locations (OL) annually. The purpose of these visits is to facilitate communication between the HQ staff and the ROA. These visits provide an opportunity to identify best practices and share them across the command's OLs. These visits will also provide HQ AFSPC with insight into range operations including range maintenance procedures, scoring, training, environmental status, manning and integration with terrestrial ranges. They are not "inspections" but rather informative visits, promoting cross-talk and problem solving.

2.6.13. (Added-AFSPC) HQ AFSPC/DRC

2.6.13.1. (Added-AFSPC) Identifies, develops, documents and staffs STTR operational requirements through validation and approval.

2.6.13.2. (Added-AFSPC) Manages the initial STTR acquisition and future modifications, enhancements or upgrades that qualify as acquisition programs as identified in AFI 10-601, *Mission Needs and Operational Requirements Guidance and Procedures*. Ensure sustainment requirements are addressed IAW AFMAN 23-110, *USAF Supply Manual*.

2.6.13.3. (Added-AFSPC) Transfers management responsibility to HQ AFSPC/XO when the system becomes operational (at predetermined time or event).

2.6.14. (Added-AFSPC) HQ AFSPC/INX and INF will validate space threat systems before acquisition and deployment at the STTR.

**2.7. Range Operating Agency (ROA) Responsibilities.** Ensure compliance with this instruction and other directives applicable to range programs. ROAs may delegate the daily scheduling, operation, maintenance, and management of the range to a subordinate unit.

2.7.1. Scheduling. Maintain centralized scheduling and control to ensure optimum range use and safety. As required, develop Letters of Agreement (LOA) for units using the range on a recurring basis. The LOA outlines scheduling priorities, eliminates need for range brief each time range is scheduled, and documents cooperative agreements for services, funding, etc.

2.7.2. Exemptions and Waivers. Submit requests for exemptions and waivers to this instruction to HQ USAF/XOOR through the parent MAJCOM.

2.7.3. Comprehensive Range Plan. Develop documents for inclusion in the unit Comprehensive Range Plan as outlined in **paragraph 3.7.** of this instruction.

2.7.3.1. Do not begin to use new ranges until the Comprehensive Range Plan is approved by MAJCOM and reviewed by HQ USAF/XOOR.

2.7.4. Range Home Pages. Each ROA will post a DoD access range home page with range information, points-of-contact, updated procedures, access to the local supplement to this instruction, scheduling information, etc. The home page will serve as the initial entry point for users to obtain information on the range and points-of-contact for questions.

2.7.5. Range Supplement. Develop and publish a local range operations and maintenance supplement to this instruction. Supplements will be reviewed and updated annually and may be published in hard copy or electronically. Range supplements should be included on the DoD access range home page.

2.7.5.1. Range Supplement Content. The range supplement must include, but is not limited to: general range description; services available; hours of operation; range diagrams; range scheduling procedures; operations; safety; emergency and jettison procedures; authorized ordnance; weapon safety footprint data; authorized frequency clearances; RCO procedures; chaff and flare operations; night, NVD operations, and laser procedures; range utilization report preparation; approval and submission procedures; support agency procedures/agreements; and definitive guidance for coordinating and scheduling all range operations to include maintenance, Explosive Ordnance Disposal, and fire fighting responsibilities.

2.7.5.1. (AFSPC) Local supplementation is mandatory and shall follow the basic AFI format and be issued in accordance with (IAW) formatting and publishing guidance contained in AFI 33-360V1, **Publication Management Program**. The contents of the local supplement may be expanded to satisfy the needs of the operating agency. The ROA has 120 days from the issue date of this supplement to develop a local supplement. Local supplements shall be submitted to HQ AFSPC/XOC for review prior to the ROA approval. A copy of the local supplement, along with the basic publication and any higher headquarters supplements, will be maintained by RCO during STTR operations.

2.7.5.2. (Added-AFSPC) The distribution list for the local supplement will include at least the following:

All units expected to use the range on a regular basis:

HQ AFSPC/XOT/XOC/XOO/XOS

HQ SMC/CC/SY

HQ SWC/CC

HQ SWC/Det 1

595 SG/CC

595 SG/OL-AA

17 TS/CC

17 TS/Det 1

14AF/CC/A3



21SW/CC

21OG/CC

1SPCS

4SPCS

76SPCS

50SW/CC

50OG/CC

1SOPS

2SOPS

3SOPS

4SOPS

Space Operations Combined Task Force (SOCTF)/ Multi-mission Space Operation Center (MMSOC)

2.7.6. Range Maintenance Schedule. Develop an annual range maintenance and clearance/ decontamination schedule that complies with the requirements of this instruction. Maintenance will be preventative as well as corrective. The Functional Director or Functional Commander will have overall responsibility for oversight. Quality Assurance (QA) personnel will have responsibility for evaluating and documenting contractor performance IAW the Quality Assurance Surveillance Plan (QASP).

2.7.7. Range Target Preparation/Maintenance and Residue Clearance. Schedule all range residue clearance and final removal/disposal. The unit Comprehensive Range Plan will include the clearance schedule and life cycle Target Area preparation/maintenance and residue disposal/removal plan. Whenever possible, design, locate, and maintain targets to minimize future residue clearance costs to include use of innovative range clearance technologies and best management practices (target material substitution, recycling, etc.).

2.7.7.1. (Added-AFSPC) Mitigation of space debris and interference with satellite operations. The STTR will conform to current U.S. national policy concerning the mitigation of space debris. In addition, the STTR will not interfere with the operation of satellites other than authorized by the owner/operator of the satellite and in accordance with 18 USC 1367, ***Interference with the Operation of a Satellite***.

2.7.8. Range Safety. Establish range safety procedures. Range operations must ensure optimum range use while maintaining the highest standards of safety. Maintain a record showing weapon safety footprint application and authorization for each target, manned facilities, and equipment on the range.

2.7.9. Range Security. Establish range security procedures. ROAs will establish physical safeguards for scoring devices, communications, instrumentation, maintenance, and classified equipment. Additionally, security for reasons of safety is required. ROAs will establish physical safeguards/procedures with joint military and outside agencies, specifying range access control procedures. The ROA may delegate the authority, not the responsibility, for range security to other organizations or to civilian contract personnel.

2.7.10. Range Operations Officer (ROO). Appoint a ROO (in writing) to supervise daily range management, planning, and maintenance. The ROO will be a commissioned officer or DoD civilian employee. On contracted ranges, the ROO will normally have the QA responsibilities. For ANG ranges and MRTFBs, the ROA will designate the responsibilities of the ROO. The ROO or designated individual has authority over all ground operations and support functions on the range.

2.7.10.1. (Added-AFSPC) The Range Operations Officer (ROO) has authority over all space operations and support functions for the STTR. The ROO shall function as the primary focal point for operational requirements and space operations safety.

2.7.11. Range Control Officer (RCO). The ROA will certify RCOs in writing. The ROA will ensure that RCOs are fully qualified and trained IAW this instruction and MAJCOM supplements before assuming RCO duties. (Exception: for overseas ranges operated by a host nation, the USAF unit using the range will certify RCO training and qualification IAW this instruction and MAJCOM supplements.) An RCO may be a military member, a DoD civilian employee, or a government contractor, but as a desired minimum, RCOs must have rated, Air Traffic Control (ATC), Tactical Air Control Party (TACP), or weapons controller experience.

2.7.11.1. Service Class A Range. For Service Class A ranges, the RCO is responsible for all range operations and air/ground safety, except in cases where weapons release clearance is delegated. If the RCO can not positively determine that the aircraft can release safely, the RCO will delegate ordnance release clearance to a qualified flight lead, individual pilot, FAC, or other briefed person, by declaring "Authorized (flight lead, individual pilot, FAC, etc.) Control." In cases where the RCO delegates safe release of ordnance, the RCO will maintain overall authority on the range and can abort the release at any time, however, the pilot assumes sole responsibility for safe release of ordnance. The RCO must maintain continuous radio communication with all aircraft on the range and will ensure each aircraft is cleared or declare "Authorized (flight lead, individual pilot, FAC, etc.) Control" before every hot pass, to continue a dry pass, or prior to commencing laser operations IAW Joint Pub 3-09.3, *Joint Tactics, Techniques, and Procedures for Close Air Support (CAS)*.

2.7.11.2. Service Class B and C Ranges. On Service Class B and C ranges, the flight lead, individual pilot, FAC, or other briefed person assumes the responsibilities of the RCO and is responsible for safe release of ordnance.

2.7.11.3. Aerial Gunnery. The duties and responsibilities of the RCO will be IAW AFI 11-214, *Aircrew, Weapons Director, and Terminal Attack Controller Procedures for Air Operations*.

2.7.12. Range Training Officer (RTO). On Service Class D ranges, the primary RTO responsibilities in addition to flight safety are to facilitate training, provide real-time kill removal, and assist flight leads in mission reconstruction during debriefs. During autonomous air-to-air training (conducted without GCI or AWACS), the RTO may assist aircrews in maintaining aircraft inside airspace boundaries and expedite rejoins upon request. The RTO may be military or contractor furnished, but as a minimum, RTOs must possess "rated mission expertise" in the activity being performed or have Air Battle Manager/Weapons Director experience.

2.7.13. (Added-AFSPC) Identify and assist other ranges in determining how space systems will be integrated into existing infrastructures.

2.7.14. (Added-AFSPC) Submit STTR POM inputs to XOC for inclusion in future budget cycles.

- 2.7.15. (Added-AFSPC) Communicate and coordinate with Space Wings and other AFSPC organizations, other Major Commands (MAJCOMs), Department of Defense agencies, other military services and other federal government entities on matters relating to mission accomplishment or administrative support per applicable support agreements or letters of understanding.
- 2.7.16. (Added-AFSPC) Submit future STTR requirements to XOC each year for inclusion in future planning efforts.
- 2.7.17. (Added-AFSPC) Review and update the five-year Comprehensive Range Plan annually.
- 2.7.18. (Added-AFSPC) Submit quarterly and annual Range Activity Reports (IAW [Attachment 3](#)) to XOC.
- 2.7.19. (Added-AFSPC) In coordination with HQ AFSPC/XOTX, assist counterspace units with determining the best methods to achieve counterspace objectives for exercises and experiments.
- 2.7.20. (Added-AFSPC) Assist STTR users in creating the Counterspace Activity Approval Package (CAAP) in accordance with AFSPCI (TBD) and monitor its passage through the approval process.
- 2.7.21. (Added-AFSPC) Coordinate any request for new threat equipment and additions to STTR inventory with HQ AFSPC/XOC.
- 2.7.22. (Added-AFSPC) Meet with HQ AFSPC/INX at least semi-annually to ensure target preparations are in-line with the latest intelligence.

**2.8. Wing/Center Safety Responsibilities.** The Chief of Wing/Center Safety will:

- 2.8.1. Develop and implement required programs, practices, and procedures to reduce risk to the public, personnel, and resources and maximize mission accomplishment.
- 2.8.2. Advise commanders on safety requirements for all operations.
- 2.8.3. Provide wing experts for safety oversight/guidance on operational and T&E issues.
- 2.8.4. Provide mission safety requirements for operational and T&E procedures.
- 2.8.5. Develop standardized safety requirements.
- 2.8.6. Manage the weapons safety mishap-reporting program.
- 2.8.7. Investigate, report, and identify corrective actions for safety deficiencies, high accident potentials, and mishaps.
- 2.8.8. Establish operational safety criteria and establish display, tracking, and data processing parameters.
- 2.8.9. Provide analysis of flight safety criteria and establish display, tracking and data processing parameters.
- 2.8.10. Conduct analysis and advise commanders of in-flight impact, explosive, toxic, laser, radiological, and acoustic hazards.
- 2.8.11. Review and coordinate all unit operations and training documentation.

**2.9. Range Safety Personnel Responsibilities.** Range Safety Officers (RSOs), and Flight Safety Officers (FSOs) or equivalent will all be qualified military officers or government civilians. Individual Range Commanders shall establish specific qualification requirements.

**2.10. National, Regional, and Local Range and Airspace Meetings.** Actions involving use, creation, modification, or transfer of military airspace/ranges generate significant public interest. The Air Force must be prepared to address concerns raised at the local, regional, or national level during the development of any airspace/range action. AFI 13-201 describes the various forums that allow units, MAJCOMs, and HQ USAF to focus on airspace/range issues and exchange information and lessons learned in airspace/range development. These meetings ensure USAF offices involved in an airspace/range initiative have a common understanding of the objectives, status, and important issues and provide for a thorough review by an interdisciplinary team in place at all management levels. The meetings also keep the members informed of national level events and trends impacting airspace/range actions. Depending on the specific forum, membership is open to DoD representatives as well as representatives from other federal, state, local, and tribal government agencies, private organizations, and special interest groups to exchange constructive information concerning airspace/range actions. There are DoD-only sessions where it is appropriate for units to introduce an airspace/range issue or new initiative before presenting it in a Test/Training Space Need Statement (T/TSNS).

## Chapter 3

### PLANNING FOR RANGES

**3.1. Planning for Ranges.** Test and training space (airspace/ranges) includes the air, land, or sea space that is specifically used to conduct readiness test and training activities. Planning for the ranges consists of: the preliminary review processes to establish a requirement; development of the proposal for formal review and public comment, and planning/procuring of instrumentation, threat systems, and test/training range engineering development. The goal of the range planning process is to identify any existing or potential conflicts and to propose alternative solutions and recommendations.

**3.1. (AFSPC) Planning for Ranges.** Test and training space for the STTR includes designated air, land and sea space as well as those areas outside the atmosphere where space operations are conducted.

**3.2. Preliminary Review Process.** Major actions to establish, change use, modify, or delete test/training space (including ranges or permanent airspace), except those purely administrative in nature, are reviewed by units, MAJCOMs, and HQ USAF. New and on-going T/TSNSs are addressed at the applicable range and airspace meetings to provide a regional perspective to on-going initiatives. Proponents describe the concept, action, and alternatives in a T/TSNS. The T/TSNS is a brief document, in plain letter and/or outline, designed to facilitate the airspace/range review process described below, before initiating the formal aeronautical and environmental proposal processes. The T/TSNS aids the process and outlines some of the potential issues associated with proposed test/training actions. It provides a standard vehicle to obtain MAJCOM and Air Staff review, assistance, and validation early in the process. The T/TSNS is the first step in the Air Force Environmental Impact Analysis Process (EIAP), and once validated, it serves as the starting point for developing the Description of Proposed Action and Alternatives (DOPAA).

3.2.1. Other Range Users' Needs. In addition to the primary user, other range users may have needs. When any range-related action is contemplated, the proponent has the responsibility to notify users, including other MAJCOMs and Services, and solicit their input during the preliminary review processes. In addition, range users have a responsibility to notify the ROA any time their needs change. ROAs should establish a dialogue with users. Periodic conferences, which offer face-to-face contact, are often the most effective medium to stimulate dialogue. Other mediums such as computer bulletin boards, correspondence, and telephone contacts may supplement conferences or provide a substitute if a conference is not practical. Including other range users' needs strengthens the T/TSNS and adds support for the initiative. The proponent should require that all users formally submit their needs, signed by the appropriate authority, so they can be documented and included in the T/TSNS.

3.2.2. Procedures. Development of the T/TSNS varies depending upon the level of initiation and scope of the need. Units may initiate their own T/TSNS for perceived needs or MAJCOMs may direct a unit to initiate a T/TSNS for a unit mission change. For example, an F-16 unit may be directed to change their mission from air defense to general purpose or a fighter unit may be given a new missile with different operating parameters than the current airspace would allow. At a higher level, a MAJCOM may have the need to initiate a significant change in operations for a new weapon system. Unit or MAJCOM procedures apply as follows:

3.2.2.1. Unit T/TSNS. For unit proponents, the T/TSNS is initially coordinated through the unit and validated by the wing commander (or equivalent). The unit then forwards the T/TSNS to the MAJCOM for review, comment, and/or concurrence, as appropriate.

3.2.2.1. (AFSPC) Units should send their Test/Training Space Needs Statement (T/TSNS) through their chain of command to HQ AFSPC/XOT.

3.2.2.2. MAJCOM and Air Staff Review. If the MAJCOM concurs with an initiative, it forwards the T/TSNS to HQ USAF/XOOR, with an information copy to the Air Force Representative (AFREP), for Air Staff review and comment. This includes ANG and AFRC T/TSNSs. The Air Staff (USAF/XOOR, USAF/ILEV, SAF/MIQ, and SAF/GCN) review will be completed within 30 calendar days of HQ USAF/XOOR receiving the document. The MAJCOM and Air Staff will resolve issues identified during this initial review to their mutual satisfaction.

3.2.2.3. MAJCOM T/TSNS. If a MAJCOM initiates the T/TSNS, then the MAJCOM concurrently forwards it to HQ USAF/XOOR and the AFREP for Air Staff review/comment. A MAJCOM-initiated T/TSNS is appropriate when a new weapon system or weapon requires a significant change in SUA configuration (e.g., F-22, JDAM, etc.). In this case, the lead MAJCOM validates the SUA need and submits the T/TSNS to HQ USAF/XOOR for review/comment. The Air Staff and AFREP review/comment will be completed before submitting the T/TSNS to USAF/XOO.

**3.3. Develop Description of Proposed Actions and Alternatives (DOPAA).** Once the Air Staff reviews/comments on the T/TSNS, the next step is to write a DOPAA.

3.3.1. DOPAA - General Information. The DOPAA provides the framework for assessing the environmental impact of a proposal. It describes the purpose and need for the action, the alternatives, and the rationale used to arrive at the proposed action. The T/TSNS serves as the starting point for developing the DOPAA. The DOPAA includes a *Background/Purpose* statement, a section detailing the *Need*, a *Proposed Action* section, and a section listing the *Alternatives*. The remaining three sections reiterate the *Decision to be Made*, provide the *Identification of the Decision Maker*, and outline any *Anticipated Issues*. Although the proponent of the action is the one tasked to provide a complete DOPAA, the development of the DOPAA is a team effort. It is essential that operations, engineering, legal, logistics, plans, and others on the staff work together to provide all relevant inputs to ensure the DOPAA portrays an accurate description of the proposed action and alternatives. For DOPAA preparation guidance, refer to AFI 32-7061, *The Environmental Impact Analysis Process*.

3.3.1.1. Factors Influencing the Development of the DOPAA. When developing a DOPAA, the proponent needs to consider several factors during the development process. These factors help guide the planner and facilitate the identification of problem areas. If problem areas are identified during this initial assessment, the planner needs to assess their impacts and if possible, modify the proposal to eliminate or mitigate these problem areas. However, this initial assessment does not replace the EIAP. It is a tool to help proponents identify potential problem areas early in the development process, thus, significantly improving the success of the proposal, and ultimately saving time and money. The bottom line is an optimum proposal that balances the need to accomplish realistic testing/training with the need to minimize the potential impacts on the environment and the community.

3.3.1.2. Factors to be Considered when Developing the DOPAA. There are many factors to consider when developing a DOPAA. These include *Operational*; *Operations & Maintenance (O&M)*; *Airspace*; *Safety*; and *Environmental, Cultural, and Natural Resource* factors. These factors are not all-inclusive, but do provide a starting point. Each individual proposal has a unique set

of factors. Proponents must be flexible and should be prepared to identify and address these factors.

3.3.1.2. (AFSPC) Counterspace planners must consider the effect of actions upon other satellite users as well as the implications of international law and current National Space Policy. To ensure all aspects of international law and current space Policy are interpreted correctly, the Judge Advocate should be involved.

3.3.1.2.1. Operational Factors. The proponent must document operational requirements as early as possible in the planning process. Users must formally submit all needs used to derive operational requirements. It is critical that commanders (or designated representatives) approve their proposal submission. In cases where classified initiatives are involved, MAJCOMs will provide guidance on documentation requirements. HQ USAF will provide input and direction as required and will keep the Congressional delegations informed of the progress of the proposal. Consider the following needs:

3.3.1.2.1.1. Adequate range time availability to meet mission requirements. Planners must consider the number and length of range periods, day and night, needed for all users. Include time needed for daily, weekly, monthly, quarterly, and annual maintenance and residue clearance periods. These maintenance activities must be accommodated and must not be secondary to operations. In addition, include range weather trends and specify whether the range is shared with another Service or the test community.

3.3.1.2.1.2. Flexibility to restructure targets and threats to meet current and projected mission requirements. The scenarios needed to support users' requirements may vary or change from time-to-time, depending upon changed tasking or other factors. Also, periodically creating a new layout can keep the challenge in training missions and possibly help reduce complacency. Obviously, the more land and airspace available, the more flexible range operators can be in restructuring targets and threats. Unfortunately, land and airspace are usually the limiting factors, therefore, collaborating with the weapons and training officers on target and threat layouts is required.

3.3.1.2.1.3. Ability to accommodate various test and training events and scenarios based on each user's needs. This factor ties in closely with the previous one. It helps establish the minimum size requirements of the proposed range. When determining test/training space requirements, consider such factors as: Mission Design Series (MDS); types of munitions; weapon safety footprints for the kind of weapons proposed for use on the range; maneuvering space for multiple axis of attack; IP to target distances; high altitude attack tactics; flight patterns; live ordnance employment (if required); threat dispersion needs; and facility locations.

3.3.1.2.1.4. Capability to support composite force exercises. The airspace/range manager must be aware of this need early in the process since this factor may have a far-reaching impact on the various controlling agencies and may require a large training space.

3.3.1.2.1.5. Provide scoring and aircrew feedback systems. These systems are important in the training environment, for both aircrews and supervisors. Some common remotely operated scoring and feedback systems include: Television Ordnance Scoring System (TOSS); Joint Advanced Weapon Scoring System (JAWSS); aircraft instrumentation systems such

as the Air Combat Training Systems (ACTS); future systems such as the Joint Tactical Combat Training System (JTCTS); and other rangeless/untethered ACTS.

3.3.1.2.1.5. (AFSPC) Provide space operations scoring and crew feedback capabilities.

3.3.1.2.1.6. Be within the operational radius of the primary user to permit un-refueled, daily use, while optimizing test and training activities with administrative transit time. This is most important for the daily users of the range. Occasional users may be able to live with other arrangements such as refueling, deployment, etc. This need must be clear in the user's statement of need.

3.3.1.2.1.7. Accessibility of the test/training space by established Military Training Routes (MTRs) and/or low altitude Military Operations Areas (MOAs).

3.3.1.2.1.8. (Added-AFSPC) Ensure consideration for whether the unit or organization to receive training or to conduct testing on the range needs to be at an established air, ground or maritime range or can operate outside of these ranges or from home base.

#### 3.3.1.2.2. Operations and Maintenance Factors.

3.3.1.2.2.1. Ensure the range is reasonably accessible to the operating agency. Driving time, roads, and road conditions must be suitable for routine maintenance and residue clearance procedures. Consider seasonal hazards, such as ice, snow, flooding, and mud when evaluating year-round availability. Bridges providing primary access must accommodate all range equipment. Include any needed road or bridge construction in the analysis for costing purposes.

3.3.1.2.2.2. Projected cost of development, operation, and maintenance of the range must not be prohibitive, as determined by the MAJCOM. This factor is difficult to quantify during early stages of planning. From a construction and maintenance perspective (see **paragraph 3.3.1.2.5.** for the environmental perspective), try to avoid wetlands, inaccessible mountains, ravine areas, and other difficult terrain.

3.3.1.2.2.3. Conduct a hazard assessment before any range clearance operations and obtain EOD input concerning ease of UXO and residue removal. Minimize the use of targets that contain hazardous materials (petroleum, oils, lubricants, radium dials, radioactive materials, and batteries). Establish safe and practical methods for recycling and disposing of range residues IAW DoD Manual 4160.21-M, *Defense Reutilization and Marketing Manual*.

#### 3.3.1.2.3. Airspace Factors.

3.3.1.2.3.1. Ensure adequate airspace for aircraft maneuvering and weapons employment (simulated and/or live) is available. Proximity of airports, published airways, jet routes, Restricted Airspace, MOAs, MTRs, Low Altitude Training (LOWAT) areas, and nearby communities must not constrain development of airspace.

3.3.1.2.3.2. Ensure adequate MTRs, holding areas, and range entry and exit points are available.

3.3.1.2.3.3. AFI 13-201, *Air Force Airspace Management*, unit/MAJCOM airspace/range managers, and the assigned AFREP will have more information on these factors.



#### 3.3.1.2.4. Safety Factors.

3.3.1.2.4.1. Nearby air or ground activity must not jeopardize range or flight safety. Examples are antenna farms, high voltage transmission lines located along low-altitude routes, and glider and hot-air balloon areas.

3.3.1.2.4.2. Provisions for security, fire protection, and restriction of access must be achievable. Restriction of access means limiting access to the range by unauthorized individuals to avoid disrupting operations or compromising safety. Provisions for controlled, authorized entry and the ability to close off access should be considered.

#### 3.3.1.2.5. Environmental, Cultural, and Natural Resource Factors.

3.3.1.2.5.1. Shipping lanes and commercial fishing areas. The Corps of Engineers, the National Marine Fisheries Service, and the Coast Guard can help in identifying these areas.

3.3.1.2.5.2. Agricultural areas, timber lands, grazing lands, and fish and wildlife preserves. The unit civil engineering or the environmental management offices can help with information on these areas.

3.3.1.2.5.3. Major highways and waterways; national, state, and local parks; national sanctuaries and seashores; Wilderness and Wilderness Study Areas; Native American Reservations and sacred areas; and established communities, schools, churches, cemeteries, historical and archaeological sites. These can be identified from various maps and documents commonly available. The unit civil engineering and environmental management offices can help with this information. In addition, the State Historic Preservation Office, the National Park Service, the National Marine Fisheries Service, and the US Forest Service have databases on these areas.

3.3.1.2.5.4. Location of government owned or controlled lands and lands containing substantial quantities of minerals, gas, oil, or other essential raw materials. Federal and state governments publish this type of information. The Bureau of Land Management is the agency responsible for these areas on federal land.

3.3.1.2.5.5. There are various computer Geographic Information System (GIS) databases. They exist on the Internet or through MAJCOM (ACC/DOR and CEV) and Air Staff (USAF/XOOR) sources where information on many of these factors can be obtained. Contact the unit civil engineering or range office for guidance on accessing these databases.

3.3.2. Develop a Public Affairs Program. Today, almost any action proposed by the military is considered newsworthy and will attract both proponents and opponents. Therefore, it behooves the smart planner to solicit the cooperation and advice of Public Affairs personnel during all aspects of the planning process. The Public Affairs office will assist in developing a cohesive, coordinated plan to present to the public. Public Affairs in concert with the proponent should serve as the focal point for the release of information to the public. The proponent needs to keep Public Affairs personnel apprised of the status of the proposal and provide definitive guidance as to what should and should not be discussed. Additionally, all proponents are required to have successfully completed a MAJCOM Public Affairs-approved risk communication seminar before they present proposals publicly.

3.3.3. Comply with the National Environmental Policy Act of 1969 (NEPA).

3.3.3.1. NEPA, and Categorical Exclusions (CATEX), Environmental Assessment (EA) or Environmental Impact Statement (EIS). An important part of the proposal development process is the *National Environmental Policy Act of 1969* (NEPA). NEPA requires proponents for all major federal projects to consider environmental impacts. It is important to note that when choosing an alternative, NEPA does not require that the decision-maker choose the most environmentally advantageous alternative. However, NEPA does require the decision-maker to make an informed decision and consider all potential impacts. The DOPAA is used as the basis for analysis under the USAF Environmental Impact Analysis Process (EIAP). AFI 32-7061 contains policies, responsibilities, and procedures for the EIAP in the continental United States and its territories and possessions. AFI 32-7061 also addresses the EIAP at non-United States overseas locations. In summary, NEPA is a deliberate planning process designed to improve the decision making process for major federal actions. Below are the three major categories of analysis required by NEPA.

3.3.3.1.1. Categorical Exclusions (CATEX). CATEXs apply to those classes of actions that individually or cumulatively do not have significant impact on the environment, and therefore, do not require further environmental analysis in an EA or an EIS. The approved list of USAF CATEXs is in AFI 32-7061. CATEXs apply to actions in the United States and abroad. General exemptions specific to actions abroad are in DoD Directive 6050.7, *Environmental Effects Abroad of Major Department of Defense Actions*. All actions that may be CATEXed still require the preparation of a T/TSNS.

3.3.3.1.2. Environmental Assessment (EA). When a proposed action is one not requiring an EIS but is not categorically excluded, the Environmental Planning Function (EPF) must prepare an EA (Title 40, Code of Federal Regulations, [sect] 1508.9, *Environmental Assessment*). Every EA must lead to either a Finding of No Significant Impact (FONSI), a decision to prepare an EIS, or no decision on the proposal. An EA is a written analysis that provides information to determine whether to prepare an EIS or a FONSI, and aids the Air Force in complying with NEPA when an EIS is not required. EAs normally take from 6-12 months to execute. Details on EAs are in AFI 32-7061.

3.3.3.1.3. Environmental Impact Statement (EIS). Certain classes of environmental impacts require preparation of an EIS (Title 40, Code of Federal Regulations, Part 1502, *Environmental Impact Statement*). These include, but are not limited to: potential for significant degradation of the environment; potential for significant threat or hazard to public health or safety; and substantial environmental controversy concerning the significance or nature of the environmental impact of a proposed action. The EIS is a very complicated process and starts with a Notice of Intent in the Federal Register, followed by: Public Scoping, Draft EIS, Public Review of Draft EIS, Response to Comments, Final EIS, Record of Decision, and Mitigation, as required. EISs normally take 18 to 24 months to complete. Details on EISs are in AFI 32-7061.

3.3.4. Early Identification of Funding Needs. Any information, gathered during the planning process, is used to refine cost estimates. Real estate, facilities, equipment, construction, and environmental mitigation each contribute significantly to overall cost. Other significant costs may be incurred if roads, high voltage transmission lines, pipelines, or other items need to be relocated and/or if unexploded ordnance removal and historical preservation is required. Deriving a cost estimate early is important in order to get the funding process started.

3.3.4.1. Program Objective Memorandum (POM) Input. Land, equipment, construction, National Environmental Policy Act (NEPA) compliance, and all other assets needed to get a range built and in sustainable operation require funds from different appropriations accounts: O&M—Air Force (3400); RDT&E—Air Force (3600); Military Construction—Air Force (3300); Military Personnel (MILPERS)—Air Force (3500); Other Procurement—Air Force (3080); and others. The range requirements compete with other MAJCOM requirements for funding. Therefore, the POM input must be justified and impacts of not funding the proposal need to be articulated. When justifying the need, seek to show return on the investment or attempt to quantify the proposal's contribution to combat readiness or test objectives.

3.3.5. Plan For Staffing. Staffing for the range should be included as part of the overall package when it is put forward for budget consideration. Contracting for range operation and maintenance can wait until after range construction, as the lead-time to let a contract will normally be less than two years. The cost of the first year contract should be included as part of the start-up cost of the range.

3.3.6. Classified Initiatives. Occasionally, there is a need to begin range planning for aircraft bed-down, new weapon systems, or other issues that are classified. MAJCOMs will assign a single point-of-contact to provide guidance to impacted units for these activities, and will designate spokesperson(s) to respond to inquiries from external sources, such as the media or the public. Any proposed information release must be approved by the point-of-contact before it is made available to all designated spokespersons. The point-of-contact should seek assistance from the Public Affairs office.

### **3.4. Airspace Establishment and Land Acquisition.**

3.4.1. Airspace. Before establishing a need for new airspace, proponents must ensure they comply with AFI 13-201, *Air Force Airspace Management*, AFI 32-7061, *The Environmental Impact Analysis Process*, and applicable Federal Aviation Administration (FAA) Directives, which require a review of existing airspace to determine if the proposed action can be “accommodated within or by modifying existing areas.” FAA Directives also require that the military accommodate the maximum number of operations in existing airspace and limit the proliferation of new airspace. If after reviewing existing airspace, the need still can not be accommodated, then proponents will initiate the EIAP and work with the Unit/MAJCOM Airspace Manager and AFREP to secure the necessary charted airspace. Proponents will ensure they have FAA approval of the airspace before initiating a fee purchase, lease, or purchase of an easement of real estate.

3.4.2. Land. Land acquisitions require lead times as long as 5-7 years. Proponents need to work with the Unit/MAJCOM, SAF/MII, and the AF Real Estate Agency (AFREA/DR) for land acquisitions. Factors to be examined when considering the acquisition of land include: confirmation that the proposal can not be accommodated within or by modifying existing areas, and issues associated with procuring private land or withdrawing federal lands. The Federal Land Policy and Management Act of 1976, and Title 43, United States Code, Section 155-158, *Engle Act*, require Congressional approval for any public land withdrawal, reservation, or restriction of over 5000 acres for any DoD project or facility. In addition, proponents need to prepare an Environmental Baseline Survey (EBS) for land acquisitions IAW AFI 32-7066, *Environmental Baseline Surveys in Real Estate Transactions*.

3.4.3. Funding. If funding for range real estate is received in one allotment, acquisition for all lands should proceed immediately. If funds are received in increments, over multiple budget cycles, acquisition should proceed according to a plan that will allow an initial operational capability at the earliest date. For example, a range complex consisting of a Service Class A and two Service Class C tactical

range areas can be acquired in three increments. Funds from the first increment should be used to acquire lands providing the highest benefit to the Air Force. Each increment should provide an operational capability of its own.

3.4.4. Cooperation with Other Agencies. Agreements with other federal, state, local, and tribal government agencies should be finalized and signed during the acquisition phase. In some locations, USAF ranges require liaison and cooperation with many agencies in connection with livestock management, fish and wildlife conservation, forest management, immigration and border control, irrigation development, etc. It is important that any issues impacting operations or safety be settled before the range activation date. Base commanders having parent command jurisdiction of an Air Force range must investigate and ensure liaison and cooperation with appropriate agencies of federal, state, local, and tribal governments. Refer to AFI 32-7064, *Integrated Natural Resources Management*, for the requirements. Coordination IAW Executive Order 12372, *Intergovernmental Review of Federal Programs*, July 14, 1982, is required for any actions that might influence another agency's plans, programs, or projects.

**3.5. Combat Training Range (CTR) Executive Reviews.** HQ ACC/DOR, with the assistance of AF/XOOR, SAF/AQPS, AAC/WMR and OO-ALC/LHR, will conduct semi-annual executive-level reviews of all CTR programs covered by Program Management Directive (PMD) 0111(33)/PE 0604735F/0207429F. The following commands or organizations will send senior representatives (normally O-6/voting members) to the CTR Executive Reviews: ACC, AETC, AFRC, ANG, PACAF, and USAFE. HQ USAF/XOOR, AAC/WMR, OO-ALC/LHR, and SAF/AQPS are all non-voting members of the CTR Executive Reviews. The purpose of the CTR Executive Reviews is to discuss ongoing programs, advocate new requirements, and vote on funding priorities. The voting members of the CTR Executive Reviews (as delegated by their parent MAJCOMs) have approval authority on CTR funding allocations and program validation. They also provide requirements direction to AAC/WMR, SAF/AQPS, and OO-ALC/LHR. ACC/DOR, in conjunction with the user, AAC/WMR, and OO-ALC/LHR prepares the necessary requirements documentation to implement user prioritized programs. Day-to-day "user" management of CTR programs is the responsibility of ACC/DOR per the Four-Command Agreement and the "total force" concept.

3.5.1. CTR Program/Procurement of Instrumentation, Threat Systems, and Test/Training Range Engineering Development. CTRs need improvements to increase combat realism, to aid in developing tactics, and to enhance day-to-day training. This includes realistic simulations of the projected threat environment, as well as instrumentation for: readiness training, Operational Test & Evaluation (OT&E), tactics development and evaluation, command and control, safety, and real-time flight monitoring. These systems provide precise monitoring, reconstruction, and debriefing of aircrews after single and multiple aircraft training missions, including reaction to air defense threats and live or simulated ordnance exchanges. A continuous modernization program is required to ensure that CTRs meet these requirements.

3.5.2. CAF Requirements. HQ ACC/DOR is the lead agency for CAF range improvement requirements representing AETC, AFRC, ANG, PACAF, and USAFE. AMC and AFSOC will develop their own requirements. AFOTEC will coordinate on CAF requirements that need an OT&E input or have an impact on OT&E as well as Development Test and Evaluation (DT&E), Force Development Evaluation (FDE), Joint Test and Evaluation (JT&E), and Expeditionary Force Experiments (EFX). The members of the CTR Executive Reviews, AAC/WMR, OO-ALC/LHR, and the test community should attempt to combine requirements and form partnerships to seek procurement synergy.

3.5.3. (Added-AFSPC) Range Users Conference. An annual range users conference will be held at each range or at an appropriate location at the host base. The minutes will be signed by the ROA and sent electronically to HQ AFSPC/XOC. Examples of topics to be addressed include ongoing programs, new user requirements, funding priorities, scheduling, targets, terrestrial range inclusion of space activity, the counterspace activity approval process, developmental versus operational testing requirements, scoring etc.

**3.6. Test Investment Planning and Programming (TIPP) Process.** Test infrastructure is a key contributor to the test process. AFPD 99-1, *Test and Evaluation Process* states, “The Air Force will operate, maintain, and improve T&E facilities, including the Major Range and Test Facility Base (MRTFB) ... to support US Air Force, Department of Defense, and other valid user requirements. In addition, the Air Force will continually evaluate test infrastructure requirements and capabilities to ensure essential Air Force needs are met, and to avoid unnecessary duplication and expense of excess test resources.”

3.6.1. TIPP is the process for planning and programming all investments in the Air Force's T&E infrastructure within the AF Improvement and Modernization (I&M) program elements (Major T&E Investment and Threat Simulator Development) and identifying potential joint Service investment for funding under the Central T&E Investment Program (CTEIP). The purpose of TIPP is to identify the most critical shortfalls in the T&E community, develop alternatives to solve them, and deliver a corporate investment plan for budgeting and funding through the Planning, Programming, and Budgeting System (PPBS). HQ AFMC/DO manages the Air Force TIPP process to identify test resource investments needed to support military systems testing.

3.6.2. The TIPP process is how solutions to validated requirements are identified and constrained with fiscal reality into an affordable and executable investment plan. TIPP provides a systematic approach using a three-phase “strategy-to-task-to-need-to-solution” process to derive the most important Air Force T&E requirements.

3.6.2.1. Strategy-to-Task: In the strategy-to-task phase, the T&E community synthesizes requirements from the acquisition and technology communities to determine very general guidance regarding future T&E infrastructure requirements.

3.6.2.2. Task-to-Need: The task-to-need phase develops actual T&E requirements (i.e., what T&E needs to accomplish its mission) with participation from the acquisition community to review the synthesized information from the “strategy-to-task” phase and determine T&E requirements.

3.6.2.3. Need-to-Solution: The need-to-solution phase starts with the input of T&E requirements and needs developed by the T&E and acquisition communities. T&E requirements are the tasks or capabilities needed to fulfill the T&E mission. This phase determines how those needs are solved. The needs may include required upgrades, necessary sustainment, or required new test technology. However, information provided by the “strategy-to-task” and “task-to-need” phases is fiscally unconstrained. The next step is developing the Annual Planning and Programming Guidance (APPG). The APPG places fiscal reality and business practices in the process for development of the near-term T&E Improvement and Modernization portfolio for input to the Program Objective Memorandum (POM). These constraints then provide criteria to determine the most important T&E needs balanced by fiscal considerations.

**3.7. Inputs to the Unit Comprehensive Range Plan.** The designated ROA prepares inputs to the unit Comprehensive Range Plan. The goal is to enhance the compatibility of land and airspace uses and pro-

vide guidance on near and long-term needs. For new ranges, develop plan inputs before the range is operational and forward the documents to the parent MAJCOM for review/approval and forward to AF/XOOR. Inputs to the unit Comprehensive Range Plan will address as a minimum: land; airspace; range facilities; targets; instrumentation (including scoring devices); range operations; safety; environmental factors; geography; local community and government use of adjacent land (regional development agreements); legal liability; rehabilitation; range clearance/ decontamination; target lists; authorized ordnance; weapon safety footprint analysis; and future plans or other actions that may have an impact on the range. The inputs will include the following elements:

**3.7. (AFSPC) Inputs to the Unit Comprehensive Range Plan.** The ROA is the OPR for the Comprehensive Range Plan. The Comprehensive Range Plan is a five-year plan that will be reviewed/updated annually. The plan will be organized into sections as identified in paragraphs 3.7.1. thru 3.7.6. of AFI 13-212V1, *Range Planning and Operations*. To avoid duplication, other plans supporting the Comprehensive Range Plan may be referenced in the specific sections of the plan. Plans referenced and supporting the Comprehensive Range Plan will be readily available for cross-reference by posting on the STTR website.

3.7.1. Range Operations. Describe the range and its capabilities. Use maps, diagrams, etc. Report on any MOAs with other USAF agencies, other Services, FAA, etc. and include a summary of the MOAs, review and expiration schedules, and signatories. Range budgets, facility upgrades, equipment, structures, etc. should also be included. Document operational deficiencies in range area, targets, and airspace.

3.7.2. Safety. Report on range access control procedures, joint use procedures, and document weapon safety footprint analysis and approval. Document any safety deficiencies.

3.7.3. Environmental Factors. Provide a summary of all environmental factors on the range: range clearance; endangered species; emissions; air quality; noise; wetlands; water resources; coastal zones; mineral resources; soil conservation; dual use programs such as grazing, timber, farming, hunting, fishing, and camping; hazardous waste; historical/archeological sites; wilderness areas; and flood plains. ROAs should reference and summarize source documents on the above topics and provide points-of-contact and locations for the sources (reference the Cultural, Environmental, Natural Resources plan developed by the unit's Environmental Management function). Include a list of all environmental analysis performed on the range and associated airspace, with result, date signed, and location of full document. Document any noise sensitive areas, seasonal restrictions from environmental actions, etc. If environmental analysis indicates a release or substantial threat of a release of munitions constituents from an active or inactive range to an off-range area, and the release poses an imminent and substantial threat to human health or the environment, respond in accordance with DoD's explosives safety authority under 10 U.S.C. 172 as implemented in DoD Directive 6055.9, *DoD Explosives Safety Board (DDESB) and DoD Component Explosives Safety Responsibilities*, and DoD 6055.9-STD, *DoD Ammunition and Explosives Safety Standards*, and IAW response authorities under 10 U.S.C. 2701; 42 U.S.C. 9604; and Executive Order 12580, *Superfund Implementation, January 23, 1982*.

3.7.4. Geography. Include actual real property ownership maps and status for all rangelands, lease agreements, zoning, in-grants and out-grants, and regional development. Include information on encroachment, boundaries, etc.

3.7.5. Future Plans. Report on the ROA's plan to address and correct any deficiencies noted in the preceding sections. Include timelines, budgets, and copies of the approved or proposed T/TSNSs. ROAs should predict airspace/range issues in the near-term (three to five years) and propose a coordinated plan to address the required airspace/range modifications.

3.7.6. UXO/Range Decontamination. Include a plan for life cycle management of UXO and range residue. Discuss procedures on how targets are located to minimize periodic range clearance costs and final clearance costs. Ensure no deviation from these procedures until a new plan is approved by MAJCOM and reviewed by HQ USAF/XOOR.

## Chapter 4

### RANGE OPERATIONS, RANGE PERSONNEL TRAINING, AND RANGE SAFETY

**4.1. Range Operations.** Range operations will be IAW this instruction, AFI-11-214, *Aircrew, Weapons Director, and Terminal Attack Controller Procedures for Air Operations*, ACCR 55-26, *Joint Live Fire Training Operations*, T.O. 1-1M-34, *Aircrew Weapons Delivery Manual*, T.O. 1-1M-34-1, *Aircrew Weapons Delivery Manual (classified)*, aircraft specific weapons delivery T.O.s, aircraft specific AFI 11-XXX series, and Air Force Weapons School (AFWS) instructional texts. For MRTFBs additional range resource management will be IAW DoD Directive 3200.11, *Major Range and Test Facility Base (MRTFB)*.

#### 4.1.1. Use of Other Ranges.

4.1.1.1. Other Service Ranges. Either this instruction or the operating Service procedures, whichever is more restrictive, govern USAF operations on ranges operated by other Services. When using other Service ranges it is essential that all relevant weapon safety footprints be contained within the range boundaries. It is the range user's responsibility to obtain charts, range data, and flight information depicting the range boundaries and facilities to determine if the weapon safety footprints are contained within the range property. The range user must understand all risks associated with USAF operations on other Service ranges.

4.1.1.2. Overseas Ranges Operated by a Host Nation. USAF operations on overseas ranges operated by a host nation must comply with this instruction or the host nation's procedures, whichever is more restrictive.

4.1.1.3. Overseas Ranges Operated by USAF. Overseas ranges operated by USAF must comply with this instruction, DoD Directive 4715.12, *Environmental and Explosives Safety Management on Department of Defense Active and Inactive Ranges Outside the United States*, or host country guidance whichever is more restrictive. Overseas ROAs will develop theater MAJCOM approved supplements to this instruction, which govern USAF operations on host nation ranges. Supplements, at a minimum, will ensure compliance with USAF weapon and laser safety footprint requirements and have procedures in place to ensure the safety of personnel. Maintain close coordination with Department of State representatives in the host country and the theater joint staff. If the Corps of Engineers has a real estate representative serving in the host country concerned, that representative should assist in negotiating and drafting legal instruments.

4.1.1.4. Strafe on Ranges not Meeting USAF Standards. Units desiring to strafe on ranges that do not comply with this instruction must request a waiver or an exemption, as appropriate, according to **paragraph 1.6**. The request must contain a full description of the range conditions and/or intended strafe technique that will minimize risk.

#### 4.1.2. Written Agreements for Ranges.

4.1.2. (AFSPC) For written agreements such as Memoranda of Understanding, Host-Tenant Support Agreements and other formal agreements on range use between AFSPC and other MAJCOMs/Services, the ROA will serve as HQ AFSPC's representative to draft the agreement. The ROA will forward all written agreements to HQ AFSPC/XOC for -coordination prior to implementation.

4.1.2.1. Written Agreements for Ranges. If a range is used regularly for initial or continuation training, written agreements must exist between a using MAJCOM and the operating agency of



the range (another MAJCOM, Service, or nation). Limited use during exercises, deployments, evaluations, or inspections does not require written agreements, but the using unit must possess current range directives.

4.1.2.2. Written Agreements to Support Foreign Users. These agreements include the Memorandum of Understanding (MOU), Letter of Agreement (LOA), Host-Tenant Support Agreement (HTSA), and Inter-service Support Agreement (ISA). Each signer ensures that these agreements meet the needs of the organization without compromising the mission and without placing the organization in an untenable position. Coordinate the draft agreement with the staff Judge Advocate General. Provide the ROA with a copy of each agreement impacting range operations or maintenance. The ROA should be familiar with these agreements and keep them readily available to the RCO during range operations. If a conflict arises regarding one of these agreements, the ROA should resolve the issue at the appropriate level.

4.1.2.3. Memorandum of Understanding. A MOU is required for Air Force units to use weapons ranges belonging to another nation. Individual units normally author these MOUs. MAJCOM/FM, JA, and the State Department Mission in the host country review these MOUs for legal and financial implications.

4.1.2.4. Letter of Agreement. Use LOAs to specify procedures at the local level, such as those between the operating agency and the controlling agency of the local airspace.

4.1.2.5. Host-Tenant Support Agreement and Inter-service Support Agreement. An HTSA or ISA is required IAW AFI 25-201, *Support Agreements Procedures*, for Air Force units using weapons ranges belonging to other Services.

#### 4.1.3. Joint and Shared Use of Ranges.

4.1.3.1. Joint Use. USAF policy encourages joint use to maximize use of ranges and associated airspace. Ensuring public safety is critical with regard to joint use. When missions are not being flown, rangeland may be made available to authorized users for hunting, camping, etc. Live ordnance areas and other areas where hazardous activities occur must remain closed to public access until they are decontaminated to the standard set in DoD 6055.9-STD, *DoD Ammunition and Explosives Safety Standards*, or other appropriate standards determined by the DoD Explosives Safety Board, or meet the criteria set in **paragraph 4.3.16.2**. When not needed, range airspace should be released to the controlling agency for use by non-participating aircraft. LOAs with the controlling agency must specify recall conditions to ensure that military mission requirements will be met.

4.1.3.2. Shared Use. During range operations, activities such as grazing and crop cultivation can be allowed provided human access is prohibited in the Hazard Area. These activities must not impair range operations in any way.

4.1.3.2.1. Grazing Program. Grazing can be a complementary activity on USAF ranges. Procedures for managing grazing programs are described in AFI 32-7064, *Integrated Natural Resources Management*. The ROA will determine suitability and availability of grazing lands IAW AFI 32-7064. Grazing programs on Department of the Interior lands withdrawn for USAF uses are generally the responsibility of the Bureau of Land Management. In all cases, the ROA will ensure the appropriate agreements are in place to maximize shared use of the range. The agreement will ensure shared use does not adversely influence range operations, describe procedures to ensure public safety, and document agreements and agency responsibil-

ities for the shared use. An Integrated Natural Resources Management Plan (INRMP) must be prepared for all ranges addressing all issues associated with natural resources.

4.1.3.2.2. Other Commercial Activities. Air Force ranges may also offer other commercial uses such as timber management. Again, many of these programs are the responsibility of the Bureau of Land Management. The Minerals Management Service of the Department of Interior manages the oil and gas exploitation on the Outer Continental Shelf applicable to USAF overwater ranges. The ROA will ensure the appropriate agreements are in place to maximize shared use of the range. The agreement will ensure shared use does not adversely impact test/training, describe procedures to ensure public safety, and document agreements and agency responsibilities for the shared use.

4.1.3.2.3. Recreation and Education Programs. Many ranges encompass large airspace, land, or water areas and may contain significant natural resources, wild areas, historical sites, or archaeological sites. USAF, as custodian of this public property, has the responsibility to maintain it in the best manner possible consistent with the military mission. The ROA will ensure agreements are in place to maximize the safe and appropriate shared use of the range. The agreement will ensure shared use does not adversely influence range operations, will describe procedures to ensure public safety, protect natural/cultural resources, and document agreements and agency responsibilities for oversight of the shared use. The INRMP will outline public access to natural resources. This plan is prepared in cooperation with the US Fish and Wildlife Service and the state fish and game agency. Additionally, the Cultural Resources Management Plan will manage and preserve sensitive areas while addressing public concerns.

#### 4.1.4. Night Operations. (N/A AFSOC)

4.1.4.1. Night Range Operations. Night range operations present unique challenges to both the aircrew and the RCOs and will be conducted IAW AFI 11-214. Visual cues are greatly reduced, even with the use of Night Vision Devices (NVD). RCOs must be trained and certified to control missions with and without NVDs and must have a minimum of Generation III NVDs. Aircraft attitude and range are very difficult to determine at night, especially while using NVDs. If the RCO can not positively determine that the aircraft can release safely, the RCO will delegate ordnance release clearance to a qualified flight lead, individual pilot, FAC, or other briefed person, by declaring "Authorized (flight lead, individual pilot, FAC, etc.) Control." In cases where the RCO delegates safe release of ordnance, the RCO will maintain overall authority on the range and can abort the release at any time, however, the pilot assumes sole responsibility for safe release of ordnance. Additionally, a spectrum of targets should be provided ranging from well lit, easily identified, conventional targets to unlit, realistic, tactical targets. Target arrays should be coordinated with the aircrew NVD upgrade program. Range NVDs must be adjusted in an NVD eye lane for optimum visual acuity. Re-adjust them at the range tower for maximum range.

4.1.4.1.1. Night Vision Devices. All Service Class A ranges must be equipped with NVDs that are binocular in design and have at least Generation III tubes. Range NVDs will be maintained to the same standards as aircrew NVDs. MAJCOMs will approve RCO training in the use of NVDs. As a minimum, NVD training for RCOs should include: night range operations, human visual system, physiological issues, proper adjustment, care and use, NVD limitations, disorientation, and aircrew limitations. The range will be equipped with an eye lane for proper adjustment of NVDs.

4.1.4.2. Range Lighting. Proper light management is essential for safe night range operations. This lighting falls under several categories such as: range identification lighting, target lighting, range tower lighting, aircraft lighting, and IR target pointers and/or lasers.

4.1.4.2.1. Range Identification Lighting. For Service Class A ranges, a distinctive pattern of lights must be present to permit positive range and target orientation and identification. These lights must be of a type that will be visible for both “Aided” and “Un-aided” missions but should not interfere with weapons delivery by causing distraction or washing out the target locations. The pattern of these lights should be arranged in an easily identifiable, unique design. Ensure that no similar pattern of lights exists near range boundaries that could be misidentified as targets or the Target Area. The light pattern will be published in the local supplement to this instruction and on the ROA’s homepage.

4.1.4.2.2. Target Lighting. Target lighting may be accomplished using incandescent lights, lanterns, or flares. Lights and lanterns should be NVD compatible or reduced in intensity to produce the minimum halo around each light when viewed through NVDs. Every effort should be made to prevent the target from appearing as a light with a halo to allow positive target identification. Strafe target lighting should also avoid halo effects.

4.1.4.2.3. Range Tower Lighting. Proper management of Service Class A range tower lighting is important to maximize performance of NVDs used by range personnel. Tower lights (interior and exterior) should be minimized to reduce glare on the windows. Lighting on manned locations must facilitate positive identification by the aircrew. Ideally, lights necessary for operation should be replaced with lights that are compatible with NVDs. All unnecessary lights should be extinguished or taped over. Consider moving obstruction and strobe lights to locations that will best support night operations.

4.1.4.2.4. Aircraft Lighting. With RCO concurrence, all aircrews may use reduced or blacked out external lighting in restricted airspace IAW AFI 11-214 when conducting night range operations, and the range is equipped for NVG use.

4.1.4.2.5. IR Target Pointers and/or Lasers. IR target pointers may be used to help identify the location of range targets, the position of manned sites, or other locations. When using these pointers, be aware of the Nominal Ocular Hazard Distance (NOHD) and do not point the laser at unprotected personnel within the hazard zone. Additionally, a single IR target pointer will not be used as the sole source of target identification. When lasers are used to designate or mark targets, RCOs will prohibit attack headings within  $\pm 10^\circ$  of the laser designator to target line (safety zone) and will restrict aircraft target run-in headings to a  $50^\circ$  attack cone on either side of the safety zone. ROAs will publish the appropriate restrictions in their supplements to this instruction and will ensure that the range is certified for each laser use IAW this instruction. Ensure that tactics are considered when evaluating the use of lasers.

4.1.4.2.6. Other Control Methods. Other methods used to ensure safe night operations include but are not limited to: require a dry pass on the range to ensure positive identification of targets; require a day mission prior to night use if the aircrew has never flown on the range; use of radar or other aids by the RCO to determine aircraft position; and determine a minimum illumination level depending on range terrain conditions. For RCO transfer of control procedures, refer to **paragraph 4.1.4.1.**

4.1.4.3. Range Weather. Range weather restrictions for flight operations will be IAW AFI 11-214, MAJCOM, unit requirements, or specific range limits, whichever is more restrictive.

4.1.4.4. Minimum Altitudes. Minimum altitudes during night surface attack missions are IAW AFI 11-214, MAJCOM requirements, the pilot's NVD category, or the minimum altitudes allowed by actual illumination, whichever is higher.

4.1.5. Air Force Range Certification/Evaluations for Laser Operations.

4.1.5.1. Laser Operations. Before the ROA can authorize laser operations, the range must be certified IAW AFOSH Standard 48-139, *Laser Radiation Protection Program*; ANSI Z136.1, *American National Standard for the Safe Use of Lasers*; and MIL HDBK 828A, *Laser Safety on Ranges and in Other Outdoor Areas*. Range certification for laser operations is essential to range safety. Lasers can cause permanent eye damage or momentary vision loss, which could result in serious flight safety hazards.

4.1.5.1.1. (Added-AFSPC) Laser operation against spacecraft while operating on terrestrial ranges will comply with the above requirements. Whether or not on a terrestrial range, operations against spacecraft will comply with and ensure deconfliction through the Laser Clearinghouse IAW DoDI 3100.11(S), *Illumination of Objects in Space by Lasers (U)*.

4.1.5.2. Laser Certification. The range commander makes a laser certification request through the MAJCOM to the Brooks AFB Optical Radiation Safety (ORS) Team, consisting of the Air Force Research Laboratory (AFRL) and the Air Force Institute for Environment, Safety, Occupational Health and Risk Assessment (AFIERA). An on-site evaluation to assess risks, hazards, and procedures for laser operations on the range will be completed and a report provided to the range commander, base bioenvironmental engineering, and MAJCOM. The goal of the survey is to ensure safe operation of lasers on the range while minimizing the impact of any restrictions on flight operations. Once the range's laser safety program has met the recommendations of the report, it is certified for the laser operations evaluated in the report. As a minimum, evaluations will consist of:

4.1.5.2.1. Preliminary data collection.

4.1.5.2.2. On site survey-verification of data (weapons, targets, and tactics).

4.1.5.2.3. A final report that provides range specific, laser safety footprints, safety recommendations, and laser systems approved for use at that range.

4.1.5.3. Range Certification Validity. Laser certification is required to conduct laser operations on ranges. This laser certification will remain valid for three years, as long as the laser type, aircraft or platform, weapons, targets, tactics, range boundary, and airspace do not change, and despecularization meets the requirements specified in **paragraph 4.1.5.4**.

4.1.5.3.1. After initial certification, the Unit Safety Officer (USO) or designated Laser Safety Officer (LSO) will conduct a range survey status review and evaluate laser operations on the range annually. The Brooks ORS TEAM will provide the format for this report and it will be documented and reported to the MAJCOM (or equivalent) and the Brooks ORS Team. This report is essential to the continued certification of the range. The range will be decertified for laser operations if the report is not received within 45 days of the expiration of the annual reporting period and can only be re-certified by the MAJCOM (or equivalent) and the Brooks ORS Team.

4.1.5.4. Range Laser Operations. The ROA must publish or reference all laser-operating procedures in the local supplement to this instruction. The director of Base Medical Services must be notified of the specific type of laser activity that will occur on the range. Range personnel must have a baseline eye exam before working in the laser hazard environment. All range personnel working within the Laser Surface Danger Zone (LSDZ) must wear laser safety goggles of appropriate optical density. A periodic despecularization of the LSDZ surrounding the targets must be accomplished IAW MIL HDBK 828A. Lasers must not be operated without the approval of the USO or designated LSO and the RCO. The RCO will be notified and approve use of a laser when it is initially turned on and will acknowledge notification by the user that the laser is turned off upon completion of laser activity. The RCO will record the start and stop times of lasing periods.

4.1.5.5. Ground Lasers. Ground laser designator or illuminator operators will comply with the requirements of this instruction. The USO, designated LSO, or RCO will be notified when ground personnel such as Tactical Air Control Parties or Special Operations Forces conduct laser operations on the range. Ground lasers will not be directed at targets or Target Areas where the laser beam will terminate beyond the range boundary.

4.1.5.6. Laser Injury Reporting. Injury reporting will be IAW AFOSH Standard 48-139.

#### 4.1.6. Communication Requirements.

4.1.6.1. General Requirements. The operating agency must supply specific requirements and the concept of operation to the base communications officer in order to plan the desired communication facilities. Consider AFD 33-1, *Command, Control, Communications, and Computer (C4) Systems* during the planning and programming of communications and electronic systems. The exact communication facilities for each range may vary, depending on Class of Service (A, B, C, or D), location, operating conditions, usage, etc. Two general categories of communication facilities will suffice for all ranges as follows:

4.1.6.1. (AFSPC) A working relationship will be defined via a standard Memorandum of Agreement between the ROA and the closest base communications support facility. Consideration should be given to maintenance of radio, computer and network equipment. Timelines should be established for response times to outages. Efforts should be made to be compatible with other USAF ranges.

4.1.6.1.1. Point-to-point (ground) communications are required between the range (Service Class A or B), the parent or using base, and among the various agencies on the range. The point-to-point communications are usually telephone systems, although radio or microwave may be necessary in isolated locations. The range control tower must be able to communicate with the flank towers and operations buildings by means of telephone or radio systems. Backup communications (Service Class A) between towers rely on intra-base radios, which may be either the portable or porta-mobile type. Intra-base radios are used to maintain contact with maintenance personnel operating in the Target Area.

4.1.6.1.2. Ground-to-air communications are required to control aircraft on the range. The ground-to-air communications are usually ultra high frequency (UHF) radios since this is the type most often found in USAF aircraft. Very high frequency (VHF), frequency modulation (FM), or amplitude modulation (AM) radios are authorized at ranges where aircraft regularly using the range are equipped with VHF, FM, or AM radios. On Service Class A ranges, a complete UHF and/or VHF backup capability is required to avoid any loss of range missions

because of radio failure. Service Class B ranges, if staffed, must have the capability to communicate with the aircraft to provide scores; however, a backup capability is not required. No radios are required on Class C ranges.

4.1.6.1.2.1. (Added-AFSPC) The ROA will develop a standardized baseline for all STTR communications equipment on affiliated ranges. When possible/feasible, all operating locations (OLs) will comply with this standardized baseline.

4.1.6.2. Additional Service Class A Communication Requirements. On Service Class A ranges, communications between flank towers and the control tower must be operational at all times and have a backup capability. In addition, all maintenance crews, Explosive Ordnance Disposal (EOD) teams, and visitor escorts must maintain two-way communications with the range control tower, range office, or parent base while working on the range.

4.1.6.3. Communication Operations. As part of their normal duties, the range crews will operate all communications equipment used on Class A and B ranges. There is no need to assign communications personnel as radio operators, unless special conditions warrant this particular Air Force Specialty Code for a given range. The following additional guidance also applies:

4.1.6.3.1. Night Communications. In-flight range operations will be conducted on the frequency assigned to the range for communication between the RCO and range users. Standard terminology and monitoring of the inter-flight frequency by the RCO increases the flight and RCO's situational awareness and helps reduce the possibility of weapons delivery mishaps.

#### 4.1.7. Range Operations Support.

4.1.7.1. Supply. Obtain needed parts or replacements through normal supply procedures. The ROA should establish procedures with the parent supply organization to obtain materials for range operations, as well as salvage and disposal. When the distance between the parent base supply organization and the range is great, establish a separate supply section at the range to administer all supply activities.

4.1.7.2. Vehicles. The vehicles and heavy equipment necessary to operate and maintain a range will vary based upon type, number and Class of range; terrain, vegetation, soil composition and climate; distance from parent base; and availability of commercial power. Use of GFE vehicles in contract operations should be kept to a minimum per AFI 24-301, *Vehicle Operations*, and Federal Acquisition Regulation (FAR) Part 45:45.304, *Providing Motor Vehicles*. The ROA will appoint a vehicle control officer or Non-Commissioned Officer (NCO) to manage vehicle operations and responsibilities IAW AFI 24-301. The contractor is responsible for supply and maintenance support for contractor-provided vehicles. Vehicles and equipment may be obtained from the Defense Reutilization Marketing Office (DRMO) to fulfill contractual requirements. The contractor may provide maintenance for these items and parts may be obtained locally with range reimbursable funds. Consistent with AFI 24-301 and FAR Part 45:45.304, existing special use vehicles once provided GFE will be "laid in" (as authorized by MAJCOM/LG) to meet range vehicle requirements. Any subsequent need for vehicles to meet contractual requirements will be the responsibility of the range O&M contractor.

4.1.7.3. Utilities. The ROA is responsible for providing all utilities required in support of range operations. Commercially provided services should be used when available and expedient.

## 4.2. Range Personnel and Training.

4.2.1. Range Personnel Training. The ROA will establish a training program for all personnel assigned to a range IAW MAJCOM supplements. The ROA will annually review all training records. See [Attachment 2](#) for a general guide for range personnel training requirements.

4.2.2. Additional Range Personnel. Other personnel may be needed to maintain and construct targets, man scoring towers, provide fire fighting support, provide law enforcement, maintain roads, maintain radios, maintain range scoring equipment, and operate/maintain threat simulators. EOD personnel will periodically be required to supervise, perform, and certify range residue is free of energetic material during clearance operations. Specific military manpower requirements for range personnel will be IAW applicable MAJCOM or equivalent manpower instructions/standards. The number of personnel required for contract duties will be as required to meet contract Statements of Work, specifications, and military directives and instructions.

### 4.3. Range Safety.

**4.3. (AFSPC) Range Safety.** Use Operational Risk Management (ORM) analysis procedures considering all applicable guidance in AFIs and other DoD service-specific guidelines.

4.3.1. ROAs will ensure weapon safety footprints exist for all aircraft, weapons, and tactics (including other Services and countries) authorized for a given target and event on the range. Otherwise, weapons employment is prohibited. For PTRs, training weapon safety footprints must exist before the ROA authorizes operations on the range. For MRTFBs, either training weapon safety footprints or approved test weapon safety footprints and a safety risk analysis must exist before the ROA authorizes operations on the range. TEST WEAPON SAFETY FOOTPRINTS ARE NOT AUTHORIZED FOR TRAINING IF THERE IS AN APPROVED TRAINING WEAPON SAFETY FOOTPRINT. The ROA will analyze each target on the range using the applicable test or training weapon safety footprints.

4.3.2. Test Weapon Safety Footprint Methodology. On-range “containment” of a weapon systems performance envelope, impact footprint and/or associated debris fields requires the surface area (land or sea) to be protected by purchase, lease, or other restriction. This general policy ensures safety will be maximized consistent with mission requirements. However if the weapon platform’s technical characteristics exceed the ability to “contain” everything within a designated surface area, a risk management policy may be used if authorized by the Range Commander. The Range Operating Agency (ROA) will perform a risk assessment study to identify and control hazards. This risk assessment will establish mission parameters to minimize potential safety hazards associated with weapon employment.

4.3.2.1. Risk Management. Ensure Compliance with Range Commanders Council (RCC) Standard 321-97, (Common Risk Criteria for National Test Ranges) for performing a risk assessment study. Risk management is a systematic and logical process to identify and control hazards. This process includes any or all of the following steps: 1) identify the hazards, 2) define hazard levels, 3) define risks, 4) define and implement risk reduction measures, 5) obtain approval from proper authority, and 6) ultimately accept the hazard or risk.

4.3.2.2. Ensure Compliance with Range Commanders Council (RCC) Standard 321-97 for inert debris. This guidance provides levels of protection for each individual (individual risk), and acceptable risk limits for decision-makers and the overall mission (collective risk).



4.3.3. SAFE-RANGE Program Methodology and Training Weapon Safety Footprints. See AFI 13-212, Volume 3 for detailed explanation of the step-by-step procedures of the SAFE-RANGE Program methodology, and the development process for training weapon safety footprints and their application using the SAFE-RANGE Program.

4.3.3.1. Background. The principle objective of the SAFE-RANGE Program methodology is to assist the ROA in promoting safe range operations. SAFE-RANGE Program methodology identifies weapons impact point probabilities from a variety of platforms and parameters thus providing the ROA with a scientific basis for making sound range planning and operational decisions.

4.3.3.2. SAFE-RANGE Program Methodology. SAFE-RANGE Program methodology allows the ROA to identify possible target locations; modify allowable delivery ground tracks to eliminate or reduce hazards; identify the best location for range improvements; or design a new Target Area/range. The methodology is based on weapon safety footprints developed from a combination of actual weapon impact data and simulation results. A weapon safety footprint defines the minimum land required to employ a given munition safely, using a certain aircraft and delivery tactic, over a specific soil density and target type. Each weapon safety footprint incorporates a probability distribution function (pdf) which provides the information necessary to perform a quantitative risk assessment and evaluate the relative risk of an identified hazard.

4.3.3.3. Training Weapon Safety Footprints. HQ ACC/DOR is the USAF executive agent for procuring and modifying training weapon safety footprints. MAJCOMs shall fund their command unique SAFE-RANGE requirements and/or any costs for software licenses and equipment. If a specific weapon safety footprint, aircraft, and/or tactic combination does not have a validated training weapon safety footprint, that weapon, aircraft, and/or tactic combination is not authorized for employment by the training community.

4.3.3.3.1. Authorizations/Restrictions. Authorizations and restrictions will be published in the ROA's local range supplement. ACC is designated as the lead command/executive agent for training weapon safety footprint development, but not for test weapon safety footprint development for AFMC MRTFBs. MAJCOMs will coordinate with ACC/DOR for training weapon safety footprint requirements and future development.

4.3.3.3.2. SAFE-RANGE Program Computer Support. MAJCOMs will ensure each ROA has sufficient computer hardware, software, and Internet capability to operate and support the SAFE-RANGE Program.

4.3.4. Weapon Safety Footprint Application Policy. Weapon safety footprints will be applied to each target on the range. ROAs will maintain a record (electronic or hard copy) of the analysis (to include approved ordnance, deliveries, and run-in restrictions) in the local range supplement to this instruction. The weapon safety footprints define the Hazard Area around a target. Access is not authorized to the Hazard Area for a particular target when that target is in use.

4.3.5. New Weapons, Aircraft, Training Requirements. The Air Force must develop test and training weapon safety footprints as new weapons, aircraft, and employment tactics are developed and enter the operational inventory. Appropriate MAJCOMs will ensure training weapon safety footprints are available prior to levying new weapons training requirements or introducing new aircraft and weapons into the USAF inventory.

4.3.6. Use of Live Ordnance. Before a range is authorized for live ordnance use, the ROA must accomplish a T/TSNS and with the approval and assistance of the MAJCOM, and in coordination



with the parent range, will comply with the Environmental Impact Analysis Process. The ROA will ensure weapon safety footprints are analyzed before designating specific targets for live ordnance employment. Aircraft with free-falling and/or forward-firing ordnance will not over fly or point their guns at manned sites with intent to expend or employ weapons. Aircraft with moveable guns, such as helicopters and AC-130 Gunships, must not point their guns at any manned site. Facilities where the risk of damage is deemed unacceptable must not be within the weapon safety footprint and/or weapon fragmentation pattern. For day-to-day operations, the RCO (or delegated flight lead, individual pilot, FAC, or other briefed person) is the approval authority for employment of live ordnance.

4.3.7. Range Operations Near Manned Equipment and Facilities. Manned equipment and facilities, such as range towers and simulated threat emitters, may be located within the Hazard Area during range operations, provided training ordnance is used and an operational risk analysis was conducted and approved by the ROA. At a minimum, the analysis will include a SAFE-RANGE Program methodology IAW AFI 13-212, Volume 3 to assess the risk. The ROA must approve each proposal in writing. The ROA may delegate approval authority for short notice, temporary locations known to be in a low risk area. However, each location authorized by the delegated approver will be for one-time use only. Additional requests must be analyzed on a case-by-case basis and approved by the ROA.

4.3.8. Depleted Uranium (DU). Use of DU on a US government owned and operated range requires a license granted by the Nuclear Regulatory Commission (See [Chapter 8](#) for an expanded DU policy). HQ USAF/XO must approve use of DU ammunition on Air Force ranges. Limit the use of DU to that necessary to maintain readiness. Restrict the use of DU to specifically designated Nuclear Regulatory Commission (NRC) licensed Target Areas. Do not use live, full-scale munitions (this does not preclude Combat Mix) in a DU Target Area.

4.3.9. Supersonic Flight in Range Airspace. Supersonic flight over land is prohibited below 30,000 feet MSL (below 10,000 feet MSL over water and less than 15 NM from land), except where specifically authorized. Refer to AFI 13-201, *Air Force Airspace Management*, for further guidance on how to obtain a supersonic waiver. Overseas locations will obtain host nation approval as required. Approval for supersonic flight in range airspace, even above 30,000 feet MSL over land (above 10,000 feet MSL over water and greater than 15 NM from land) requires as a minimum a T/TSNS approved by the MAJCOM/DO (submit information copies to HQ USAF XOOR and ILEV).

4.3.10. Self-protection Flare and Chaff Use. Flares will be employed IAW AFI 11-214 and/or specific range guidance, whichever is more restrictive. Chaff will be employed IAW CJCSM 3212.02, *Performing Electronic Attack in the United States and Canada for Tests, Training and Exercises*, and/or specific range guidance, whichever is more restrictive. This guidance assumes use of current inventory flares and chaff, and an adequate environmental assessment of action. Any flare or chaff cartridges having significantly different characteristics (pyrophoric flares or double squibbed chaff) may be expended during authorized T&E activities until their use is authorized by the appropriate MAJCOM.

4.3.11. Armament Safety Procedures. Prior to first release when carrying expendable ordnance (live, inert, or training), final switch configuration for weapon release will not be accomplished until the aircraft is in such a position that any accidental release will be contained within the range. MAJCOMs will develop specific guidance for armament system configurations for multiple passes. After completing final weapons delivery, each flight member will perform a weapons system safety check. Refer to AFI 11-214, aircraft specific AFI 11-XXX series operating procedures, and individual range supplements for additional guidance.

4.3.12. Emergency Jettison Areas. All ranges must have an area designated for jettison of ordnance, external fuel tanks, towed targets etc. Jettison areas will be located such that maximum protection is provided to ground personnel in case the jettisoned ordnance detonates.

4.3.13. Range Demonstrations and Visitor Procedures. These events educate observers about Air Force capabilities. Staging these events presents additional concerns for safety. Each ROA must publish or reference procedures in their local range supplement to ensure positive control of all spectators. Visitor locations must be analyzed using the SAFE-RANGE Program to ensure that spectators are not within the Hazard Area during operations. The ROA will have control in those limited cases where DoD personnel or contractors must be within the Hazard Area during operations to accomplish a specific mission-related task. Waiver requests will be IAW **paragraph 1.6**.

4.3.13.1. (Added-AFSPC) A visitor's log will be maintained at the STTR and at each operating location (OL). The logs will be maintained at the range or its OLs for a minimum of 3 years.

4.3.14. Flight Safety.

4.3.14.1. Activation of Airspace. The RCO will activate range airspace with the local Air Traffic Control (ATC) facility or Air Traffic representative IAW local agreements between the ROA and the controlling agency. The request for activation should be timed (before a scheduled mission) to allow shared or joint users to clear the area and for the controlling agency to make internal adjustments.

4.3.14.2. Weather Observation. The RCO will monitor weather conditions and wind direction/velocity. The RCO will get current altimeter settings, temperature, and wind direction/velocity from the local base weather station, command post, Automated Surface Observing System (ASOS), or ATC agency at least hourly, if the capability is not available at the range. The local weather detachment or command post should advise the RCO of any sudden adverse weather changes that might impact range operations or safety.

4.3.14.3. Range Restricted Area—Community Relations. To maximize safety on and around ranges, the ROA must engage in an active and comprehensive public outreach program. This can include attendance at public governmental meetings, community briefings, establishment of community advisory groups, etc. However, all such public programs will be coordinated through the unit's public affairs and legal offices. ROAs will follow guidance published in AFI 13-201 and include information on the hazardous operations associated with range activities as well as the dangers to non-participating aircraft. The RCO and/or flight-lead are responsible for enforcing safe operating procedures during range operations.

4.3.14.4. Aircraft Accident Procedures. In case of an aircraft crash during Service Class A range operations, the RCO will initiate all necessary emergency actions. These include appropriate notifications, closing of the range, and assuming responsibility as the interim on-scene commander until the crash response team can be organized. During Service Class B and C range operations, the flight lead, individual pilot, FAC, or other briefed person will start the emergency actions, and if feasible, act as the interim on scene-commander. Investigations will be conducted IAW AFI 91-204, *Safety Investigations and Reports*.

4.3.15. Ground and Explosive Safety.

4.3.15.1. Ground and Explosive Safety. The ROA is responsible for establishing procedures for ground and explosive safety. In addition, the ROA must ensure public notices are published relative to danger zones associated with ranges under the operating agency's control.

4.3.15.1. (AFSPC) Each ROA, in conjunction with the wing safety agency, will compile all range associated AF Forms 457, **USAF Hazard Report**, and forward to HQ AFSPC/XOC quarterly for review. The USAF Hazard Report will be used to identify any hazards found for corrective action. AFSPCHOI 91-1, **Mishap Review Panel**, will be used to ensure mishap events, recommendations and corrective actions are methodically addressed.

4.3.15.2. Hazard Notice. The ROA must ensure that hazard notices inform the local populace of hazards associated with trespassing on range property. Posted notices saying "Bombing Range" or "Gunnery Range" must meet the requirements of AFI 31-209, *The Air Force Resource Protection Program*, and AFI 31-101, Volume 1, *The Air Force Physical Security Program*. MAJCOMs and ROAs are required to develop procedures for permitting/deconflicting ground party and non-military activities on the range.

4.3.15.3. First Aid and Evacuation. There must be provisions for first aid as well as expeditious pickup and evacuation of aircrew members or range personnel injured during range operations.

4.3.15.4. Fire Fighting Equipment. On Service Class A and staffed Service Class B ranges, appropriate fire fighting equipment and personnel must be available to deal with local fire hazards. This capability may be provided through USAF, land owner, in-service civilian, or independent contractor assets, or through agreement with another government agency such as the Bureau of Land Management or US Forestry Service. Sufficient hand-operated fire fighting equipment must be assigned directly to the range for emergency use.

4.3.15.5. Emergency Procedures. Emergency procedures for each range must be published in the local range supplement.

4.3.15.6. Safety Briefing Requirements. The ROA or contractor will provide and document initial and yearly ground and explosive safety briefings to personnel assigned to operate and maintain Air Force ranges. Non-EOD personnel will receive appropriate training from EOD personnel before assisting in range clearance. Authorized visitors and personnel who infrequently visit the range must be briefed on range safety.

4.3.15.6. (AFSPC) The range safety briefing shall precede entry into any Hazard Areas and shall be documented in the range visitor's log. The range safety briefing will be tailored, on an as-needed basis, to include the items listed in AFI 13-212V1, paragraph **A2.1.4**.

4.3.15.7. Hazard Condition Watch. The RCO and all range personnel must continually watch for hazardous conditions such as trespassers, fires, abnormal bird activity, etc. Range users will be notified immediately of any hazardous conditions on the range. If safety is in question, the RCO will stop range operations until the situation is remedied.

#### 4.3.16. Range Access.

4.3.16.1. Target Area Access. The Target Area is the area on a range complex that immediately surrounds the target or designated mean point of impact. Only authorized personnel will be allowed access to Target Areas. Public access to Target Areas is prohibited. The Target Area demarcation will be determined locally based on an Operational Risk Management (ORM) analysis IAW AFI 91-213, *Operational Risk Management (ORM) Program*. The ORM analysis exam-

ines geographic features, frequency of EOD sweeps, type of ordnance authorized, employment tactics, and type of proposed joint or shared use. The Target Area demarcation should normally be no less than 1000 feet from the center of the target or designated mean point of impact. The ORM analysis is required for all new targets, and existing targets will be examined to determine if an ORM analysis is required. The ROA will certify that all Target Area access procedures and rules sufficiently protect all personnel and property.

**NOTE:**

ORM is an interdisciplinary team approach to managing risk. ORM membership includes but is not limited to operations, civil engineering, environmental, legal, public affairs, safety, and EOD.

4.3.16.2. Hazard Area Access. The Hazard Area is the area of a range defined by a composite of all weapon safety footprints for all authorized weapon delivery events, against targets located in the Target Areas. Access to Hazard Areas is not authorized when the range is in use, and must be positively controlled when the range is not in use. Unless authorized by the ROA, public access is prohibited in Hazard Areas used for live munitions. All live munitions must be accounted for in a Hazard Area or a portion of a Hazard Area before public access is authorized. Access to Hazard Areas will be determined locally based on an ORM analysis that examines geographic features, frequency of EOD sweeps, types of ordnance authorized, employment tactics, and type of proposed joint or shared use. The ROA will certify that all Hazard Area access procedures and rules sufficiently protect all personnel and property. On ranges where Hazard Area access is controlled by another agency, it is the responsibility of the ROA to establish procedures to control access and inform that agency of potential hazards.

4.3.16.2.1. Weapon Safety Footprint Area. A closed contour that defines the land area containing 99.99 percent (at a 95 percent confidence level) of all initial impacts and ricochets, resulting from the release of a specified weapon type during air-to-surface weapon delivery events.

4.3.17. (Added-AFSPC) Unintentional Spacecraft Interference and Other Accident Procedures. In addition to guidance found in AFI 91-204, AFSPC Supplement 1, ***Safety Investigations and Reports***, and AFI 51-503, ***Aerospace Accident Investigations***, the ROA will inform 14AF/A3 and HQ AFSPC/XOC of any unintentional interference with spacecraft operations or any other activity that results in an accident or mishap. The ROA will also ensure that the appropriate operational chain is notified when the accident or mishap involves operational systems. Notification of range occurrences that will require HQ AFSPC/XOC involvement or assistance will be initiated telephonically, at the discretion of the ROA, as soon as practical, and will be followed up by electronic mail. Information copies of correspondence concerning range occurrences shall be provided to HQ AFSPC/XOCD. HQ AFSPC/XOC will be notified by message or electronic/standard mail when 14AF or the ROA convenes a formal investigation concerning range incidents. HQ AFSPC/XOC will provide assistance to the investigation.

## Chapter 5

### ELECTRONIC COMBAT TRAINING OPERATIONS

**5.1. Electronic Combat Training Operations.** This chapter provides general description, policies and procedures for all Electronic Combat Ranges and Electronic Scoring Sites (ECRs/ESSs). The MAJCOMs are responsible for establishing procedures and training principles used by Electronic Combat (EC) operations personnel. In cases where civilian contractors provide ECR/ESS operations, variances may be necessary. However, the basic training principles outlined in this instruction will be adhered to, while allowing for deviations in range operations and organizational structure. Each MAJCOM/ROA will develop and reference ECR/ESS operating procedures as a supplement to this instruction.

5.1.1. Mission. The mission of an ECR/ESS is to provide a realistic electronic threat environment for the combat training of aircrews. In addition, ECRs/ESSs provide Electronic Combat support for composite force training, unit exercises, unit gunnery competitions, normal training missions, and higher HQ exercises or inspections. To accomplish this, EC threat equipment and operating procedures must closely parallel those of the anticipated enemy threat systems.

5.1.2. Electronic Scoring Sites. ESSs are no-drop bomb scoring sites that primarily support aircrew training for strategic and tactical weapons delivery or tactical cargo airdrops in a realistic environment. ESSs are normally located near instrument MTRs. These ranges require only a small land area for equipment location. An ESS has the capability to provide mission debriefings detailing individual aircrew or large force analysis/feedback on the effectiveness of Electronic Counter Measures (ECM) and threat avoidance procedures.

5.1.3. Electronic Combat Ranges. Collocated with air-to-air and air-to-surface ranges, ECRs provide a simulated electronic threat environment for aircrew combat training. ECRs can vary in complexity and the level of training provided. ECRs are located within range boundaries, and off-range to provide aircrew training in MOAs, MTRs, and other SUAs. ECRs are further delineated as Basic or Advanced ECRs.

5.1.3.1. Basic ECR. Basic ECRs provide Electronic Combat training primarily to units within a local operating area. A Basic ECR consists of at least three geographically separated threat emitters capable of providing a limited EC threat environment. Additionally, each Basic ECR has the capability to provide analysis/feedback on the effectiveness of ECM and/or threat avoidance procedures.

5.1.3.2. Advanced ECR. Advanced ECRs provide a variety of electronic combat training scenarios in an Integrated Air Defense System (IADS) environment. An Advanced ECR consists of a minimum of ten geographically separated threat emitters integrated in an IADS type environment capable of providing a variety of tactical and strategic Surface-to-Air Missile (SAM) and Anti-Aircraft Artillery (AAA) training scenarios. Mobile emitters are used to provide scenario flexibility. Additionally, each Advanced ECR has the capability to provide mission debriefings detailing individual aircrew or large force analysis/feedback on the effectiveness of ECM and threat avoidance procedures.

5.1.4. Electronic Combat Personnel Training. ECRs/ESSs provide a realistic electronic threat environment for aircrew combat training. Therefore, it is essential that threat operators assigned to ECRs/ESSs have a working knowledge of EC doctrine and employment concepts.

5.1.4.1. Training Programs. Management criteria, administrative practices, and training policies required to conduct a comprehensive ECR/ESS training program will include academics and practical application in live and simulated environments. Unit developed training programs will adhere to applicable USAF/MAJCOM safety procedures. ECR/ESS personnel should be familiar with applicable MAJCOM-series training events.

5.1.4.2. Responsibilities. Unit commanders, ECR/ESS operations officers, and/or site managers are responsible for the selection and written designation of instructor personnel who will conduct site training. The unit training officer/site manager is responsible for developing the unit training programs, training schedules, quarterly and annual unit training plans, and lesson plans, and is the unit approving authority for all unit developed training courses or programs.

**5.2. Electronic Combat Equipment Management.** EC range equipment consists of SAM simulators, AAA simulators, Smokey SAMs, and ground-based jamming systems. See AFI 13-212, Volume 2 for special equipment and systems to simulate enemy threats. (See [Attachment 1](#) for emitter/simulator definition).

5.2.1. Requests for New/Additional Threat Systems, Reallocation, and Modification. HQ ACC is the lead command for all requests for new/additional threat emitters, simulators, and systems. AFI 10-901, *Lead Operating Command--Communications and Information Systems Management*, provides guidance on the lead command duties and responsibilities. Development of new threats systems will be processed through the CTR Executive Review. The impacted MAJCOMs will mutually agree upon requests for reallocation of threat systems. HQ USAF/XOOR will arbitrate any unresolved issues.

5.2.1. (AFSPC) Requests for new/additional space threat systems will be forwarded to HQ AFSPC/XOC.

5.2.2. Requests for Disposition of Equipment. MAJCOM approval is required before a unit deactivates, transfers, or decommissions any threat emitter or simulator. All deactivation/decommission and final disposition requests will be processed through the applicable MAJCOM and forwarded to HQ ACC. HQ USAF/XOOR will arbitrate any unresolved issues.

5.2.2. (AFSPC) Forward deactivation/decommission and final disposition requests for space threat emitters and simulators to HQ AFSPC/XOC.

5.2.3. Equipment Inventory and Configuration Control. HQ ACC/DOR will develop and maintain a system that accurately inventories, tracks equipment, and documents the configuration of threat emitters and simulators.

5.2.4. Range Equipment Utilization. Each ECR/ESS is required to report monthly range equipment utilization as part of the quarterly range equipment utilization report IAW this instruction.

5.2.5. ECR/ESS Equipment. AFI 13-212, Volume 2 lists the equipment used for Electronic Warfare and Radar Bomb Scoring (RBS).

**5.3. Radio Frequency Spectrum Issues.** ROAs will coordinate all systems requiring radio frequency spectrum through the appropriate MAJCOM Spectrum Management Office. Failure to consider frequency requirements during initial range planning could seriously hamper testing as well as limit training once a system becomes operational.

**5.3. (AFSPC) Radio Frequency Spectrum Issues.** Refer to AFI 10-707, AFSPC Supplement 1, *Spectrum Interference Resolution Program*, for additional details on reporting spectrum interference. The AFSPC lead for radio frequency spectrum issues is HQ AFSPC/LCAS.

**5.4. Electronic Warfare Product Improvement Working Group (EW PIWG).** The Range Threat Systems Office will chair an EW PIWG IAW AFI 21-118, *Improving Aerospace Equipment Reliability and Maintainability*. The primary goals of the EW PIWG are to receive feedback from equipment users, jointly establish priorities for future efforts, develop solutions to Reliability & Maintainability (R&M) problems, and provide updates concerning on-going efforts.

**5.5. Conduct of Electronic Attack and Chaff Procedures.** Use, approval, and employment of Electronic Attack and chaff will be IAW CJCSM 3212.02, *Performing Electronic Attack in the United States and Canada for Tests, Training and Exercises*, and/or specific range guidance, whichever is more restrictive.

**5.5. (AFSPC) Conduct of Electronic Attack and Chaff Procedures.** AFSPC organizations will also comply with the provisions of DODI S-3100.15(S), *Space Control (U)*, AF Supplement and other classified documents as applicable.

**5.6. Scheduling.** ROAs will schedule ESS activity via the approved military scheduling authority for that asset. Attempt to schedule ESS activity to maximize asset usage and minimize unit-training conflicts.

**5.7. Electronic Scoring Site Activity.** ROAs should make every effort to score requested ESS activity. Aircrews should conduct ESS activity IAW procedures in the appropriate aircraft specific AFI 11-XXX series. ESSs refer to the chapter pertinent to the system or area of operation necessary for mission accomplishment. Enter deviations from scoring directives in Site Remarks Section of Aircrew Score Information Network (ASIN), Command Bomb Data Analysis (CBDA), or other report. MAJCOMs will determine mission priorities for unit ESS activity.



## Chapter 6

### REPORTING REQUIREMENTS

**6.1. Reporting Requirements.** Range resources are limited, costly, and subject to competing requirements for their use. Range utilization reports provide important data for the management of these resources. To plan and document use of these resources, MAJCOMs will ensure their ROAs compile quarterly range utilization reports as outlined below and maintain a three-year historical record of these reports. HQ USAF/XOOR in conjunction with the MAJCOMs will develop and maintain an AF range utilization database to track range use, as well as usage data on electronic threat, scoring, and instrumentation feedback systems. Reporting requirements covered in this chapter apply to USAF managed or scheduled ranges only.

#### 6.1.1. Report Requirements and Protocols.

6.1.1. (AFSPC) ROA will ensure a monthly Range Activity Report is compiled. Each range operations officer/contract range supervisor will maintain accurate records of range operation and maintenance time plus closures and cancellations to assist in making accurate monthly reports. The RM/contract range supervisor will submit the completed form to the ROA.

6.1.1.1. Data Currency. ROAs will update data currency monthly and submit quarterly reports to MAJCOMs no later than 10 working days following the reporting period. MAJCOMs will validate these reports and forward to HQ USAF/XOOR no later than 15 working days following the reporting period.

6.1.1.2. Reporting Methods. E-mail or updates via a World Wide Web page are the primary reporting method. Data disks may be submitted instead of e-mail. E-mail accounts for all users in the reporting chain will be identified with MAJCOM or unit and the appropriate office symbol followed by the words "Range Utilization Report" (i.e., 27OSS/OSTR Range Utilization Report). Do not use personal addresses.

6.1.1.3. Time Calculations. The monthly resource utilization data will be recorded in hours and tenths of hours. When two or more activities use resources simultaneously, identify time for all users.

6.1.1.4. Classification. Submit only unclassified reports. Transmit classified information separately through proper means.

6.1.1.4. (AFSPC) Transmit classified reports to HQ AFSPC/XOC via appropriate means.

**6.2. Range Utilization Report.** ROAs will use these reports to track a variety of data associated with determining range workload requirements and providing information associated with environmental actions. ROAs will report all range utilization, cancellations, and closures. MAJCOMs/ROAs can use the range utilization reports to determine manning requirements (contractor or government personnel) before the start of each fiscal year. MAJCOMs will include a synopsis of this analysis when submitting POM and annual budget requests. See [Attachment 3](#) for range utilization report content and format.

**6.3. Expended Munitions Tracking Report.** ROAs will maintain permanent records of all expenditures (types, quantities, locations, using organization, and estimated dud rates) per target of ammunition and



explosives. MAJCOMs/ROAs will comply with the record keeping requirements of Title 40 Code of Federal Regulations, Part 260, *Military Munitions Rule*, DoD Directive 4715.11, and DoD Directive 4715.12.

**6.4. Range Residue Clearance/Decontamination Report.** Each ROA will submit a range residue clearance/decontamination report to their MAJCOM, concurrent with periodic or annual clearance activity. This report is a record of events involved in residue clearance/ decontamination of a range. It must include the number of people and the amount of money and material required to accomplish the work. The report indicates the areas that have been cleared to include precise area boundaries. For closing, transferring, and transferred ranges, attach the range residue clearance/decontamination report to the Certificate of Clearance. The Certificate of Clearance is a report that becomes an official document certifying that all dangerous and explosive materials reasonably possible to detect have been removed.

**6.5. RAMPOD Configuration Management System.** The Reliability, Availability, Maintainability Pod (RAMPOD) configuration management system is a PC-compatible, database system that is used to track pod/test-set location, movement, modernization, configuration, utilization, and maintenance status. RAMPOD requires field units/contractors to update the database system to reflect any changes in location, configuration, or maintenance status of the pod/test-set. This system provides visibility into the disposition and configuration of these assets to all levels of command. AAC/WMR will monitor the RAMPOD configuration management system. Funding will be provided by AAC/WMR or as agreed upon by the CTR Executive Review members. Termination of the RAMPOD system will be at the discretion of the CTR Executive Review members. The RAMPOD system policies and procedures apply to CAF, AETC, AFRC, and ANG units.

6.5.1. Policy. Units requesting additional pods/test-sets to fill mission requirements on a temporary basis (no transfer of ownership) will attempt to resolve these requests inter-unit. Temporary loans will be annotated by the lending unit in the RAMPOD database. Unfulfilled requirements will be forwarded to ACC/DOR for arbitration and direction by the CTR. Shipping costs will be the responsibility of the gaining unit. Pods will be returned in the same maintenance status as they were received. Units requesting additional pods/test sets and related equipment to fill mission requirements on a permanent basis (transfer of ownership) will attempt to resolve these requests inter-MAJCOM. The coordinated request will be forwarded to ACC/DOR. Shipping costs will be the responsibility of the gaining unit. Additionally, the CTR Executive Review members will coordinate with ACC/DOR, who will provide final distribution plans for new production pods/test-sets to AAC/WMR. ACC/DOR will work day-to-day issues and any additional changes to the approved plan. AF/XOOR will arbitrate any unresolved differences.

6.5.2. Responsibilities. AAC/WMR will provide funding to support the RAMPOD system or as agreed upon by the CTR Executive Review members. HQ ACC/DOR will provide units with direction for implementation of RAMPOD, including, but not limited to: activities associated with collection and maintenance of data, input pod/test-set inter-unit movement procedures, configuration change, routine maintenance and actual pod loss/damage data into the RAMPOD, and coordinate with RAMPOD in efforts to compile, maintain, and report reliability/maintainability data for the ACTS pods/test sets. The purpose of this guidance is to ensure standardization and continuity. MAJCOMs will provide direction to field units by establishing procedures to ensure all data is submitted to RAMPOD. This provides an accurate means of assessing reliability and maintainability of components, maintenance and repair events, and on-line inventory and warranty status from system level to the lowest serialized component. WR-ALC/RAMPOD will collect maintenance data for Reliability and

Maintainability (R&M), warranties, and other information as deemed necessary to meet RAMPOD requirements. Under no circumstances will units move pods/test-sets either on a temporary or permanent basis without documentation in the RAMPOD system.

## Chapter 7

### **RANGE MAINTENANCE; AMMUNITION, EXPLOSIVES, AND OTHER DANGEROUS ARTICLES (AEDA)/RANGE RESIDUE CLEARANCE/DECONTAMINATION; AND CLOSING OR TRANSFERRING OF AIR FORCE RANGES**

**7.1. Range Maintenance.** ROAs must develop an annual range maintenance and clearance/decontamination schedule that renovates, removes, replaces, and overhauls range targets and systems. Maintenance should be preventative as well as corrective. Range maintenance is the responsibility of the ROA through in-house or contract resources. If range maintenance has been contracted, the Functional Director or Functional Commander will have responsibility for oversight.

**7.2. Ammunition, Explosives, and Other Dangerous Articles (AEDA)/Range Residue Clearance/Decontamination Responsibility.** Each MAJCOM/ROA is responsible for AEDA/range residue clearance on active and inactive ranges under its control IAW DoD Directive 4715.11, *Environmental and Explosives Safety Management on Department of Defense Active and Inactive Ranges within the United States*, DoD Directive 4715.12, *Environmental and Explosives Safety Management on Department of Defense Active and Inactive Ranges Located Outside the United States*, and Title 40 Code of Federal Regulations, Part 260, *Military Munitions Rule*. Furthermore, each MAJCOM/ROA must dispose of radioactive wastes IAW the Air Force Radioactive and Mixed Waste Office (AFRMWO) and AFI 40-201, *Managing Radioactive Materials in the US Air Force*. In addition, each MAJCOM/ROA should accomplish a periodic despecularization on those ranges used for laser training (see **paragraph 4.1.5.4.** ). The ROA is responsible for funding and scheduling all AEDA/range residue clearance. The ROA should publish a "straw-man" schedule in the unit Comprehensive Range Plan. This plan must address USAF, federal, state, local, tribal, and host nation requirements and standards for land management and pollution abatement. The ROA or QAE may temporarily postpone AEDA/range residue clearance on a case-by-case basis for severe weather or other unforeseen circumstances that warrant delays.

**7.3. AEDA/Range Residue Clearance/Decontamination.** AEDA/range residue clearance includes the removal or disposal of all ordnance, inert ordnance residue, Training Projectile (TP) ammunition, and other range residue material reasonably possible to detect (normally down to four inches in size). Military EOD personnel or civilian UXO contractors inspect ordnance residue. Military EOD personnel render safe and dispose of unexploded ordnance IAW established procedures and practices. Trained non-EOD range or range O&M contractor personnel may then remove safe or inert ordnance residue, TP ammunition, and other range material. EOD personnel must brief the range clearance personnel on the possible hazards and the safe handling of debris. Debris should be subjected to double-inspection or a mechanized process to ensure AEDA is not released to the public. Dispose of safe ordnance debris according to appropriate Defense Reutilization and Marketing Office (DRMO) directives, as directed by Memorandum of Agreement with DRMO, or through an option for direct commercial sales. Processing AEDA residue should not be viewed as a funds generating activity. Management and disposal of AEDA must consider safety first. Additionally, DoD Instruction 4715.4, *Pollution Prevention*, excludes ships, aircraft, weapons, other material required to be demilitarized or mutilated, and scrap resulting from demilitarization from being sold through a qualified recycling program. The proceeds from their sale SHALL NOT be returned to a qualified recycling program.

7.3.1. To identify, safeguard, and dispose Unexploded Ordnance (UXO), MAJCOMs will ensure that all ROAs accomplish the following:

7.3.1.1. Safely clear UXO from ranges consistent with the stated mission of the installation and for the continuing viability of the range. Resolve all conflicts between explosive safety and other requirements with the objective of minimizing explosive hazards. Do not use controlled burning as a method of UXO clearance on USAF ranges. Burning to clear vegetation is authorized so long as environmental and safety requirements are met.

7.3.1.2. Prepare a plan for range clearance operations. At a minimum, consider the number of personnel involved, types of ordnance anticipated to be encountered and/or recovered, support requirements, expected levels of contamination, and a clearly articulated rationale for UXO clearance.

7.3.1.3. Prohibit unauthorized access to ranges and Target Areas. Post UXO hazard warning signs where possible (bilingual, as required) and require other access controls, as necessary.

7.3.1.4. Ensure individuals authorized access to USAF ranges receive appropriate explosive safety training before entering the range.

7.3.1.5. Establish an outreach program to educate installation personnel and the public about the dangers of trespassing and UXO hazards. Using appropriate forums, address range issues that have the potential to influence the surrounding community.

7.3.1.6. Respond promptly to protect personnel and property from any UXO located off a military installation IAW AFI 32-3001, *Explosive Ordnance Disposal Program*.

7.3.1.7. Notify installation personnel and the public, as appropriate, if any range operation presents a potential explosive hazard off the range. This includes informing the public of any mishap that could influence the local community and may require additional precautions and/or restrictions.

7.3.1.8. Respond immediately to releases or substantial threats of release of hazardous UXO constituents, when such release or threat of release poses an imminent and substantial threat to human health or the environment IAW DoD Response authorities under Title 10, United States Code, Section 2701, *Environmental Restoration Program*, and Title 42, United States Code, Section 9604, *Response Authorities*.

7.3.1.9. On active and inactive ranges, the procedures for evaluating and responding to explosives safety, human health, and environmental risks will be IAW Title 40 Code of Federal Regulations, Part 260, *Military Munitions Rule*.

7.3.1.10. Limit the use of live cluster munitions (Mk-20 Rockeye and CBU-XX series munitions) for training. Conduct cluster munitions release on designated Target Areas only and make all reasonable attempts to employ inert and live cluster munitions on different targets.

7.3.1.11. To the maximum extent practicable, designate separate Target Areas for live and inert ordnance training.

7.3.1.12. Maintain permanent records of:

7.3.1.12.1. All expenditures (types, quantities, locations, using organization, and estimated dud rates) per target of ammunition and explosives.

7.3.1.12.2. All mishaps attributed to UXO that occur on or off the installation IAW DoD Instruction 6055.7, *Mishap Investigation, Reporting, and Recordkeeping*.

7.3.1.12.3. All EOD incidents or UXO clearance operations conducted on ranges.

7.3.1.12.4. All areas known or suspected to contain UXOs using range maps and/or installation master planning maps. Conduct historical research as necessary.

7.3.1.13. Remove all hazardous material from items used as targets IAW AFI 13-212, Volume 2.

**7.4. AEDA/Range Residue Clearance Types and Requirements.** The three AEDA/range residue clearance types are active, inactive, or excess, depending on the status of the range concerned. Limit active AEDA/range residue clearance to the range surface. Perform subsurface AEDA/range residue removal, as required, (e.g. construction work in the Target Area, burying cables, etc.) to a depth that permits safe operations on the range. Report subsurface AEDA/range residue clearance separately. Clear active ranges or in-use Target Area programmed for continued use as described below. The frequency of AEDA/range residue clearance is established by the Functional Director or Functional Commander and is verified by the QA personnel, based on the type of range and specific circumstances surrounding its use. Target Areas used specifically for testing live munitions containing extremely hazardous fusing will be identified as "Extremely Hazardous Contaminated Target Areas". Clearance requirements of "Extremely Hazardous Contaminated Target Areas" will be based on an Environmental, Safety, and Occupational Health (ESOH) risk analysis, and if warranted, a waiver request will be forwarded to HQ USAF/XOOR for staffing through appropriate USAF ESOH agencies.

7.4.1. Periodic AEDA/Range Residue Clearance/Decontamination. The frequency for AEDA/range residue clearance for Service Class A/MRTFBs is every three months or 75 Use-Days. Clear the targets used for missiles, rockets, and bomb testing/training of all UXO and inert residue to a radius of 100 meters. ANG, Edwards AFB, and Eglin AFB will comply with the provisions in [7.4.2.1.](#)

**NOTE:**

On a conventional range, strafe targets are hand-policed daily, and a more detailed clearance is performed every week or six Use-Days.

7.4.2. Annual Range Residue Clearance/Decontamination.

7.4.2.1. Service Class A, B, and C Ranges. Annually, clear the areas around the targets used for missiles, rockets, and bomb testing/training of all UXO and inert residue to a radius of 300 meters (1000 feet). In addition, annually, clear the access ways into the tactical targets as well as the area 30 meters (100 feet) on either side of the access ways. When targets are relocated, clear the access ways and new Target Areas per the annual clearance criteria. The ANG, Edwards AFB, and Eglin AFB requirement is to clear, as prescribed above, any target with 20,000 bombs dropped on it or all targets annually, whichever occurs first.

7.4.3. Complete Clearance. Every five years perform a Complete Clearance on each existing range. The Complete Clearance includes inspection, removal, and disposal of munitions and unusable target debris and may be accomplished incrementally (e.g. 20% of the required area per year for five years). The criteria for Complete Clearance is a radius of 1000 meters around each target or an area that has a density factor of less-than-or-equal-to five whole ordnance items per acre, whichever is closer to the target. To ensure adequate range residue clearance/decontamination, MAJCOMs or equivalents will specify ordnance-sampling criteria for areas outside of the cleared areas up to the range boundaries. Clear these areas when the criteria reach a density factor of greater than five whole ordnance items per acre.

7.4.4. AEDA/Range Residue Clearance/Decontamination Waivers. MAJCOMs may submit a waiver request to HQ USAF/XOOR if they require relief from the AEDA/range residue clearance and decontamination requirements. Waiver approval will be based on individual merit and extenuating circumstances (e.g., USAF Target Areas overlapping with other Service Target Areas). The waiver package must include ESOH risk analysis and identify precautions to take in order to minimize hazards, as well as a plan to achieve full compliance with clearance/decontamination requirements before the waiver expires.

7.4.5. Equipment Used in Maintenance and Clearance/Decontamination. See AFI 13-212, Volume 2 for equipment used in maintenance and AEDA/range residue clearance/decontamination.

7.4.6. Decontamination Assistance. Forward requests for periodic and complete range decontamination assistance to the EOD team responsible for that range. If manning assistance is required, the EOD team will forward a request to the MAJCOM EOD functional management office at least 90 days before the proposed start of the operation. The request should include:

7.4.6.1. Periods of required assistance (days, weeks, etc.).

7.4.6.2. Number of personnel required.

7.4.6.3. Names and telephone numbers of the operating agency point-of-contact.

**7.5. Closing or Transferring of Ranges.** It is Air Force policy to decontaminate and issue Certificates of Clearance for excess ranges or ranges converted to other uses but remaining on the installation property inventory.

7.5.1. DoD 6055.9-STD, *DoD Ammunition and Explosives Safety Standards* identifies UXO decontamination standards for closed, transferred, and transferring military ranges. Closed ranges include those ranges that are within military control but are put to a use incompatible with range activities. Transferring ranges include those ranges associated with Base Realignment and Closure (BRAC) activities and other property transfers to non-military entities. Transferred ranges include those identified in the Formerly Used Defense Site (FUDS) program.

7.5.2. Declaration of Excess Ranges. Whenever a range is no longer required for any military purpose and the decision is made to remove it from the rolls of USAF property, a declaration of excess property is made. Prepare a declaration of excess land IAW AFI 32-9004, *Disposal of Real Property*, and submit through the parent base and MAJCOM real property channels to HQ USAF/XOOR and the Air Force Real Estate Agency (AFREA) (SAF/MII). If the lands recommended for disposal have hazardous ordnance debris, UXO, or other potentially hazardous contamination, then the MAJCOM must decontaminate IAW **paragraph 7.5.3.**

7.5.3. Decontamination Requirements. It is Air Force policy to decontaminate and issue certificates of clearance for excess ranges or ranges converted to other uses but remaining on the installation property inventory. If the lands recommended for disposal have hazardous ordnance debris, UXO, or other potentially hazardous contamination, then the MAJCOM is required to:

7.5.3.1. Prepare a Notice of Contamination.

7.5.3.2. Prepare a Land Use Determination.

7.5.3.3. Decontaminate the land IAW DoDD 4715.11 and DoD 6055.9-STD.

7.5.3.4. Prepare a Certificate of Clearance. Attach a range residue clearance/decontamination report, approved by the DoD Explosives Safety Board (DDESB), to the Certificate of Clearance. Forward the Certificate of Clearance with the Report of Excess (SF 118) to AFREA (SAF/MII) for forwarding to the General Services Administration. Info HQ USAF/XOOR.

7.5.3.5. Ranges that are inactive and planned by the MAJCOM to be converted to other uses, but remain on the installation property inventory, require that the MAJCOM:

7.5.3.5.1. Decontaminate the land IAW DoDD 4715.11 and DoD 6055.9-STD.

7.5.3.5.2. Document clearance/decontamination actions in the appropriate tabs of the unit Comprehensive Range Plan. Forward two copies of the report to the installation responsible for the range. File the original copy with the real estate records maintained by the base civil engineer.

7.5.3.5.3. Prepare a Certificate of Clearance. Attach a range residue clearance/decontamination report, approved by DDESB, to the Certificate of Clearance. Upon completion, forward the Certificate of Clearance and DDESB approval to AFREA (SAF/MII). Info HQ USAF/XOOR.

7.5.4. Compliance with NEPA when Closing or Transferring Ranges. NEPA requirements are based primarily on which agency has environmental responsibility for the land, who is to receive the land, and what the immediate use of the land will be. Generally, the landowner has the environmental responsibility unless it is specifically vested in another party through a lease, license, LOA, or other legal instrument. Normal transfer of real property to other governmental agencies (e.g., returning public domain land to the Department of Interior or reporting excess real property to the General Services Administration for disposal) is categorically excluded from the Environmental Impact Analysis Process. Consult the servicing staff judge advocate whenever questions regarding NEPA compliance arise.

7.5.5. Airspace. If a range is no longer required for military use and is permanently converted to other uses and no longer requires secure airspace over or around it, the airspace will be turned over to the FAA IAW AFI 13-201, *Air Force Airspace Management*. If the range requires AEDA and range residue clearance/decontamination, the airspace should not be released to the FAA until the clearance efforts are finished, because these efforts may present a danger to low flying aircraft.

7.5.6. Equipment and Facilities. All government-owned range equipment will be returned to the parent base controlling the range, when the range is no longer used as an active range. Secure range facilities so they do not create a potential hazard to personnel. In some cases, this may involve demolition and removal of existing structures. If demolition or removal is necessary, ensure compliance with the Environmental Impact Analysis Process.

## 7.6. Ensuring Safety.

7.6.1. Safety Training. Exercise extreme caution when working within weapon Target Areas to preclude inadvertent detonation of UXO. Ground and explosive safety briefings will be provided to all non-EOD personnel engaged in range residue clearance operations. Non-EOD personnel must be briefed on the markings used for practice and inert ordnance, on ordnance rendered safe, and the hazards they may encounter. The non-EOD personnel may assist in removing training ordnance and other inert ordnance that have been inspected and marked for removal by EOD personnel.

**WARNING:**

At no time will non-EOD personnel attempt to move munitions (except training gun ammunition on targets designated for that use, and expended Smokey Sam missile simulators) until they have been examined by EOD personnel and rendered safe. Only EOD technicians are authorized to handle the disposal of hazardous energetic items.

**WARNING:**

Decontamination of ranges is prohibited during periods in which snow covers the ground. Placement of new targets, target maintenance, removal, and replacement are not authorized during these periods.

7.6.2. Safety Requirements. During maintenance and AEDA/range residue clearance, specific arrangements must be made to ensure that aircraft operations do not pose a hazard to ground personnel. Each working team must have a signaling device for use in the event an uninformed flight crew attempts to use the range. In addition, all ground personnel must maintain two-way communications with the range control tower or range office while engaged in residue clearance operations.

7.6.2.1. Service Class A Range Operations During Maintenance and Clearance/Decontamination. Maintenance and AEDA/range residue clearance/ decontamination can be conducted on one side of a dual Service Class A range (except behind strafe targets) while the RCO is controlling aircrew training missions on the other side of the range.

7.6.2.2. Service Class B and C Range Operations During Maintenance and Clearance/ Decontamination. Service Class B and C ranges will be closed during maintenance and AEDA/range residue clearance/decontamination. However, if several Class B and C ranges are located together, or if the range is of sufficient size, clearance/decontamination can occur on a portion of the range while the remainder is being used. The operating agency must ensure that aircrews are briefed concerning the location of ground personnel and that no ordnance is released until target identification is certain.

7.6.2.3. Over flight Procedures. Over flight is not authorized without ROA/RCO approval over areas or portions of ranges during maintenance and clearance/ decontamination. This ensures the protection of ground personnel and prevents aircraft damage by fragments from demolition operations. Strict adherence to the procedures outlined below is mandatory.

7.6.2.3.1. Range Operations During EOD/Maintenance Closures. Anytime personnel are on a range and no demolition operations are planned, missions may be scheduled for dry-only operations above 3000 AGL. During demolition operations, missions may be scheduled for dry-only operations above 10,000 AGL. When no personnel are on the range, but the range is closed for EOD/maintenance, missions may be scheduled for dry-only operations with no EOD/maintenance directed minimum altitude restrictions. ONLY SIMULATED WEAPONS DELIVERIES, IAW AIRCRAFT SPECIFIC DIRECTIVES, AND EYE SAFE LASER OPERATIONS ARE AUTHORIZED DURING EOD/MAINTENANCE CLOSURES. These restrictions will be clearly identified in the range schedule, and reinforced by range NOTAMS and range operations. In flight, if range operations reports unscheduled personnel on the range, missions will be checked in for dry-only operations above 3000 AGL. In flight, if range operations reports unscheduled demolition operations, missions will be checked in for dry-only operations above 10,000 AGL.



7.6.2.3.2. Chaff and Flares. Chaff and flares are authorized in all the above cases IAW standard operating procedures and local supplements.

## Chapter 8

### TEST AND TRAINING USE OF DEPLETED URANIUM

**8.1. Policy and Procedures for Use of Depleted Uranium.** This instruction establishes policy and procedures for the use of Depleted Uranium (DU) by Air Force units. Test and training operations involving DU will be IAW this instruction, AFI 40-201, *Managing Radioactive Materials In The US Air Force*, and the applicable USAF Radioactive Material Permit issued under the authority of USAF Master Materials License by the Air Force Medical Operations Agency's (AFMOA) Radioisotope Committee (RIC).

#### 8.2. Responsibilities.

8.2.1. HQ USAF. The Air Staff provides policy and operational oversight of the use of DU. Approval authority for the use of DU rests with HQ USAF/XO.

8.2.2. Air Force Medical Operations Agency (AFMOA). The RIC (AFMOA/SGOR) provides regulatory oversight of all radioactive material used in the Air Force, other than those classified as falling under Section 91B of the Atomic Energy Act (AEA).

8.2.3. Unit Commanders. Ensure that only authorized DU activities are conducted, establish programs to ensure activities are accomplished safely and in compliance with requirements, and identify resources needed to comply with this instruction.

8.2.4. Personnel handling Depleted Uranium. Individual users are responsible for effective control of DU by:

8.2.4.1. Complying with radiation safety procedures outlined in the license or permit authorizing the storage or use of DU, the referenced directives, local operating instructions or directives, and verbal instructions of their Radiation Safety Officer and supervisor.

8.2.4.2. Stopping any imminent danger situation immediately, placing the operation in a safe configuration, and informing their Radiation Safety Officer or supervisor of unsafe or non-compliant radiological conditions and incidents or accidents involving DU.

**8.3. Authorized Locations.** The use of DU is restricted to sole use Target Areas. Except for Combat Mix, all other munitions (including practice training munitions) are prohibited from use in a DU Target Area. Testing of 30 mm API (DU) munitions and reliability certification flight tests are limited to the following locations:

##### 8.3.1. 30 mm API (DU) Testing.

8.3.1.1. Eglin Air Force Base, Florida, Range C-64. To conduct life cycle testing of 30mm API (PGU-14/B) ammunition, rounds are fired into an enclosed gun butt. Use Range C-64C to handle, store, machine, and test R&D items within an enclosed test chamber.

8.3.1.2. Nellis Test and Training Range, Nevada, Target 63-10. To conduct Operational Test and Evaluation (OT&E) in order to verify ballistics, Operational Flight Program (OFP) software changes, Low Altitude Safety and Targeting Enhancement (LASTE) upgrades, and to conduct USAF Weapons School instructor pilot training and tactical employment evaluation using Combat Mix.

##### 8.3.2. Reliability Certification Flight Tests.

8.3.2.1. Authorized DoD Installations. Authorized installations in support of the reliability certification flight test program include: UTTR; Eglin AFB; Kwajalein Test Range; Alaska Test Range; and Tonopah Test Range. Reliability certification flight test activities at Vandenberg AFB, Nellis AFB, Whiteman AFB, and Barksdale AFB are limited to carrier/weapon interface and launch only.

8.3.2.2. Jurisdiction. Use of DU for reliability certification flight tests is a 91B activity and falls under the jurisdiction of HQ AFSC/SEW.

#### **8.4. Disposal/Decommission Procedures.**

8.4.1. Disposal of Expended DU Penetrators. Expended DU penetrators and visible fragments will be collected, packaged, and disposed of in coordination with the base Radiation Safety Officer and the Air Force RIC. Before commencing clearance actions, an EOD team will sweep the Target Area and “safe” any UXO. Annually, authorized personnel will manually remove visible DU rounds and fragments, and package them for disposal (see **paragraph 8.4.1.2.** ).

8.4.1.1. Authorized Personnel. Personnel trained in DU hazards and wearing the appropriate personal protective equipment, as determined by a qualified health physicist and the base Radiation Safety Officer, will remove penetrators and fragments.

8.4.1.2. Disposal Packing Requirements. Penetrators and fragments will be packaged for disposal or recycling IAW instructions provided by the Air Force Radioactive and Mixed Waste Office (AFRMWO). Prepare requests for disposal or recycling IAW AFI 40-201 and coordinate with the base Radiation Safety Officer.

8.4.1.3. Contaminated Targets. Vehicles and tanks that are no longer intended to be used as targets or are so damaged from use that they are in need of replacement will be identified and decontaminated or have arrangements made for proper disposal or recycling (See **paragraph 8.4.1.2.** ).

8.4.2. Decommission Plan. Prior to expending DU at any authorized location, units will develop a decommissioning plan identifying costs to remediate DU contamination at the site based on current technology. Review and update the decommissioning plan biennially and provide a copy of the plan to the RIC (AFMOA/SGOR).

ROBERT H. FOGLESONG, Lt General, USAF  
DCS, Air and Space Operations

**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

**NOTE:** The user of this instruction is responsible for verifying the currency of the cited documents.

***Legislative***

10 U.S.C. 172, *Ammunition Storage Board*

10 U.S.C. 2701, *Environmental Restoration Program*

42 U.S.C. 9604, *Response Authorities*

43 U.S.C. 155-158, *Engle Act*

40 CFR Part 260, *Military Munitions Rule*

40 CFR Part 1502, *Environmental Impact Statement*

40 CFR [sect] 1508.9, *Environmental Assessment*

***Executive Orders***

Executive Order 12580, *Superfund Implementation, January 23, 1982*

Executive Order 12372, *Intergovernmental Review of Federal Programs, July 14, 1982*

***US Government Agency Publications***

CJCSM 3212.02, *Performing Electronic Attack in the United States and Canada for Tests, Training and Exercises*

DoD Directive 3200.11, *Major Range and Test Facility Base (MRTFB)*

DoD Directive 4715.11, *Environmental and Explosives Safety Management on Department of Defense Active and Inactive Ranges within the United States*

DoD Directive 4715.12, *Environmental and Explosives Safety Management on Department of Defense Active and Inactive Ranges Located Outside the United States*

DoD Directive 6050.7, *Environmental Effects Abroad of Major Department of Defense Actions*

DoD Directive 6055.9, *DoD Explosives Safety Board (DDESB) and DoD Component Explosives Safety Responsibilities*

DoD Instruction 4715.4, *Pollution Prevention*

DoD Instruction 6055.7, *Mishap Investigation, Reporting, and Recordkeeping*

DoD 6055.9-STD, *DoD Ammunition and Explosives Safety Standards*

DoD Manual 4160.21-M, *Defense Reutilization and Marketing Manual*

FAA Handbook 7610.4, *Special Military Operations*

FAR Part 45:45.304, *Providing Motor Vehicles*

FLIP, *Flight Information Publication*

Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms*

Joint Pub 3-09.3, *Joint Tactics, Techniques, and Procedures for Close Air Support (CAS)*

***Air Force Publications***

ACCR 55-26, *Joint Live Fire Training Operations*

AFDD 1-2, *Air Force Glossary*

AFPD 10-14, *Modernization Planning*

AFI 10-901, *Lead Operating Command--Communications and Information Systems Management*

AFI 11-202, Volume 3, *General Flight Rules*

AFI 11-214, *Aircrew, Weapons Director, and Terminal Attack Controller Procedures for Air Operations*

Aircraft specific AFI 11-XXX series

AFPD 13-2, *Air Traffic Control, Airspace, Airfield, and Range Management*

AFI 13-201, *Air Force Airspace Management*

AFI 13-212, Volume 2, *Range Construction and Maintenance*

AFI 13-212, Volume 3, *SAFE-RANGE Program Methodology*

AFI 21-118, *Improving Aerospace Equipment Reliability and Maintainability*

AFI 24-301, *Vehicle Operations*

AFI 25-201, *Support Agreements Procedures*

AFI 31-101, Volume 1, *The Air Force Physical Security Program*

AFI 31-209, *The Air Force Resource Protection Program*

AFI 32-3001, *Explosive Ordnance Disposal Program*

AFI 32-7061, *The Environmental Impact Analysis Process*

AFI 32-7064, *Integrated Natural Resources Management*

AFI 32-7065, *Cultural Resources Management*

AFI 32-7066, *Environmental Baseline Surveys in Real Estate Transactions*

AFI 32-9004, *Disposal of Real Property*

AFPD 33-1, *Command, Control, Communications, and Computer (C4) Systems*

AFMAN 37-139, *Records Disposition Schedule*

AFPAM 38-102, *Headquarters United States Air Force Organization and Functions (Chartbook)*

AFI 40-201, *Managing Radioactive Materials In The US Air Force*

AFMAN 91-201, *Explosives Safety Standards*

AFI 91-204, *Safety Investigations and Reports*

AFI 91-213, *Operational Risk Management (ORM) Program*

AFPD 99-1, *Test and Evaluation Process*

AFI 99-101, *Developmental Test and Evaluation*

AFI 99-102, *Operational Test and Evaluation*

AFMAN 99-104, *Armament-Munitions Test and Evaluation Process*

AFI 99-105, *Live Fire Test and Evaluation Process*

AFI 99-106, *Joint Test and Evaluation*

AFI 99-108, *Programming and Reporting Missile and Target Expenditures in Test and Evaluation*, RCS: HAF-TEP (SA) 7101

AFI 99-109, *Test Resources Planning*

AFMAN 99-110, *Airframe-Propulsion-Avionics T&E Process*

AFMAN 99-111, *C4I T&E Process*

AFMAN 99-112 *Electronic Warfare (EW) Test and Evaluation Process*

AFMAN 99-114, *Space Systems T&E Process*

AFOOSH Standard 48-139, *Laser Radiation Protection Program*

ANSI Z136.1, *American National Standard for the Safe Use of Lasers*

MIL HDBK 828A, *Laser Safety on Ranges and in Other Outdoor Areas*

T.O. 1-1M-34, *Aircrew Weapons Delivery Manual*

T.O. 1-1M-34-1, *Aircrew Weapons Delivery Manual (classified)*

ACC-AETC-PACAF-USAFE Four-Command Agreement

### ***Abbreviations and Acronyms***

**AAA**—Anti-Aircraft Artillery

**ACC**—Air Combat Command

**ACCs**—Areas of Critical Concern

**ACMI**—Air Combat Maneuvering Instrumentation System

**ACO**—Area Control Officer

**ACTS**—Air Combat Training Systems

**ADDs**—Advanced Display and Debriefing Subsystem

**AEA**—Atomic Energy Act

**AEDA**—Ammunition, Explosives, and Other Dangerous Articles

**AETC**—Air Education and Training Command

**AFI**—Air Force Instruction

**AFM**—Air Force Manual

**AFMC**—Air Force Materiel Command  
**AFMOA**—Air Force Medical Operations Agency  
**AFOSH**—Air Force Occupational Safety and Health  
**AFOTEC**—Air Force Operational Test and Evaluation Center  
**AFPD**—Air Force Policy Directive  
**AFRC**—Air Force Reserve Command  
**AFREA**—Air Force Real Estate Agency  
**AFRIC**—Air Force Ranges Investment Council  
**AFREP**—Air Force Representative  
**AFRMWO**—Air Force Radioactive and Mixed Waste Office  
**AFSOC**—Air Force Special Operations Command  
**AFWS**—Air Force Weapons School  
**AGL**—Above Ground Level  
**AGTS**—Aerial Gunnery Target System  
**AM**—Amplitude Modulation  
**AMARC**—Aerospace Maintenance and Regeneration Center  
**AMC**—Air Mobility Command  
**ANG**—Air National Guard  
**ANGRC**—Air National Guard Readiness Center  
**AOPA**—Aircraft Owners and Pilots Association  
**API**—Armor Piercing Incendiary  
**APPG**—Annual Planning and Programming Guidance  
**AR**—Accelerated Response  
**ARC**—Airspace/Range Committee  
**ASIN**—Aircrew Score Information Network  
**ASOS**—Automated Surface Observing System  
**ATC**—Air Traffic Control  
**ATV**—All Terrain Vehicle  
**BRAC**—Base Realignment and Closure  
**CAF**—Combat Air Forces  
**CAS**—Close Air Support  
**CATEX**—Categorical Exclusion

**CBDA**—Command Bomb Data Analysis  
**CCS**—Computation and Control Subsystem  
**CERCLA**—Comprehensive Environmental Response, Compensation, and Liability Act of 1980  
**CFA**—Controlled Firing Area  
**C2ISR**—Command, Control, Intelligence, Surveillance, and Reconnaissance  
**CFR**—Code of Federal Regulations  
**CM**—Combat Mix  
**CMR**—Combat Mission Ready  
**CTEIP**—Central T&E Investment Program  
**CTR**—Combat Training Range  
**DDESB**—DoD Explosives Safety Board  
**DDS**—Display and Debriefing Subsystem  
**DERP**—Defense Environmental Restoration Program  
**DMPI**—Designated Mean Point(s) of Impact  
**DoD**—Department of Defense  
**DOPAA**—Description of Proposed Actions and Alternatives  
**DRMO**—Defense Reutilization and Marketing Office  
**DT&E**—Development Test and Evaluation  
**DU**—Depleted Uranium  
**EA**—Environmental Assessment  
**EBS**—Environmental Baseline Survey  
**EC**—Electronic Combat  
**ECM**—Electronic Counter-Measures  
**ECR**—Electronic Combat Range  
**EFX**—Expeditionary Force Experiments  
**EIAP**—Environmental Impact Analysis Process  
**EIS**—Environmental Impact Statement  
**EOD**—Explosive Ordnance Disposal  
**EPA**—Environmental Protection Agency  
**EPF**—Environmental Planning Function  
**ESOH**—Environmental, Safety, and Occupational Health  
**ESS**—Electronic Scoring Site



**EW**—Electronic Warfare  
**FAA**—Federal Aviation Administration  
**FAC**—Forward Air Controller  
**FAR**—Federal Acquisition Regulation  
**FDE**—Force Development Evaluation  
**FEBA**—Forward Edge of Battle Area  
**FLIP**—Flight Information Publication  
**FM**—Frequency Modulation  
**FONSI**—Finding of No Significant Impact  
**FSO**—Flight Safety Officer  
**FTS**—Flight Termination Systems  
**FUDS**—Formerly Used Defense Site  
**FYDP**—Future Years Defense Program  
**GFE**—Government Furnished Equipment  
**GIS**—Geographic Information System  
**GSA**—General Services Administration  
**HEI**—High Explosive Incendiary  
**HM/HW**—Hazardous Materials/Hazardous Waste  
**HTSA**—Host-Tenant Support Agreement  
**IADS**—Integrated Air Defense System  
**IAW**—In Accordance With  
**ICD**—Interface Control Document  
**IERA**—Institute for Environment, Safety, Occupational Health and Risk Assessment  
**IFR**—Instrument Flight Rules  
**I&M**—Improvement and Modernization  
**INRMP**—Integrated Natural Resources Management Plan  
**IOC**—Initial Operational Capability  
**IR**—IFR Route  
**IRIG**—Inter-Range Instrumentation Group  
**ISA**—Inter-service Support Agreement  
**JAWSS**—Joint Advanced Weapon Scoring System  
**JDAM**—Joint Direct Attack Munition

**JMEM**—Joint Munitions Effectiveness Manual  
**JTCTS**—Joint Tactical Combat Training System  
**JT&E**—Joint Test and Evaluation (JT&E)  
**KIAS**—Knots Indicated Airspeed  
**KTAS**—Knots True Airspeed  
**LASTE**—Low Altitude Safety and Targeting Enhancement  
**LEP**—Laser Eye Protection  
**LOA**—Letter of Agreement  
**LOWAT**—Low Altitude Training  
**LSDZ**—Laser Surface Danger Zone  
**MAJCOM**—Major Command  
**MAMS**—Military Airspace Management System  
**MAP**—Mission Area Plan  
**MDS**—Mission Design Series  
**MFCO**—Mission Flight Control Officer  
**MNS**—Mission Need Statement  
**MOA**—Military Operations Area  
**MOU**—Memorandum of Understanding  
**MR**—Mission Ready  
**MRTFB**—Major Range and Test Facility Base  
**MS**—Mission Support  
**MSL**—Mean Sea Level  
**MSP**—Mission Support Plan  
**MTR**—Military Training Route  
**MUTES**—Multiple Threat Emitter System  
**NAEC**—National Airspace/Range Executive Council  
**NCO**—Non-Commissioned Officer  
**NEPA**—National Environmental Policy Act of 1969  
**NGB**—National Guard Bureau  
**NM**—Nautical Mile  
**NOHD**—Nominal Ocular Hazard Distance  
**NRC**—Nuclear Regulatory Commission

**NVDs**—Night Vision Devices  
**OAP**—Offset Aim Point  
**OFP**—Operational Flight Program  
**O&M**—Operations and Maintenance  
**OPR**—Office of Primary Responsibility  
**ORM**—Operational Risk Management  
**OT&E**—Operational Test and Evaluation  
**PACAF**—Pacific Air Forces  
**pdf**—probability distribution function  
**PIWG**—Product Improvement Working Group  
**PDO**—Publishing Distribution Office  
**PEM**—Program Element Monitor  
**PGM**—Precision Guided Munitions  
**PMD**—Program Management Directive  
**POL**—Petroleum, Oil, and Lubricants  
**POM**—Program Objective Memorandum  
**PPBS**—Planning, Programming, and Budgeting System  
**PTR**—Primary Training Range  
**QAE**—Quality Assurance Evaluator  
**QASP**—Quality Assurance Surveillance Plan  
**RAEC**—Regional Airspace/Range Executive Council  
**RBS**—Radar Bomb Scoring  
**RCC**—Range Commanders Council  
**RCO**—Range Control Officer  
**RD**—Range Director  
**R&D**—Research and Development  
**RDO**—Range Destruct Officer  
**RE**—Range Evaluation  
**REU**—Remote Emitter Unit  
**RIC**—Radioisotope Committee  
**RIIS**—Range Integration Instrumentation System  
**RISPO**—Range Instrumentation System Program Office

**R&M**—Reliability and Maintainability  
**ROA**—Range Operating Agency  
**ROO**—Range Operations Officer  
**RSO**—Range Safety Officer  
**RTO**—Range Training Officer  
**SAF**—Secretary of the Air Force  
**SAM**—Surface-to-Air Missile  
**SAP**—Surveyed Aiming Point  
**SCDU**—Signal Conditioning Display Unit  
**SECDEF**—Secretary of Defense  
**SIB**—Safety Investigation Board  
**SNWD**—Simulated Nuclear Weapons Delivery  
**SS**—Source and Special  
**SSS**—Smokey Sam Simulator  
**SUA**—Special Use Airspace  
**T&E**—Test & Evaluation  
**TA**—Table of Allowance  
**TACP**—Tactical Air Control Party Test  
**TEMP**—Test and Evaluation Master Plans  
**TFR**—Terrain Following Radar  
**TIPP**—Test Investment Planning and Programming  
**TIS**—Tracking Instrumentation Subsystem  
**T.O.**—Technical Order  
**TOSS**—Television Ordnance Scoring System  
**TP**—Training Projectile  
**TPSI**—Time-Space-Position-Information  
**TRAINS**—Threat Reaction Analysis and Indicator System  
**TRTG**—Tactical Radar Threat Generator  
**T/TSNS**—Test/Training Space Need Statement  
**UAV**—Unmanned Aerial Vehicle  
**UHF**—Ultra-High Frequency  
**USAFE**—United States Air Forces Europe

**U.S.C.**—United States Code

**UXO**—Unexploded Ordnance

**VFR**—Visual Flight Rules

**VHF**—Very-High Frequency

**VR**—VFR Route

### *Terms*

**NOTE:** The purpose of this glossary is to help the reader understand the terms used in this publication. It does not encompass all pertinent terms. Joint Publication 1-02, DoD Dictionary of Military and Associated Terms, and AFDD 1-2, Air Force Glossary, contain standardized terms and definitions for DoD and USAF use.

**Aerial Gunnery Target System (AGTS)**—The AGTS incorporates a towed banner target with an acoustical sensor that scores gunnery hits by counting the audible passage of cannon rounds through the banner material. The AGTS is reeled in and recovered by the tow aircraft if there is no damage to the target.

**Air Force Representative (AFREP)**—An Air Force officer stationed at HQ FAA or a regional office and accredited by AF/XO to provide USAF representation to FAA on airspace/range and air traffic control matters.

**Alert Area**—Airspace designated to inform pilots of a high level of training activity or any unusual activity where prior knowledge would significantly enhance air safety. There are no restrictions placed on non-participating IFR or VFR aircraft.

**Ammunition, Explosives, and other Dangerous Articles (AEDA)**—Any substance that: by its composition or chemical characteristics, alone or when combined with other substance(s), is or becomes an explosive or a propellant; or is hazardous or dangerous to personnel, animal, or plant life, structures, equipment, or the environment as a result of blast fire, fragmentation, radiological or toxic effects.

**Armor Piercing Incendiary (API)**—A 30 mm round consisting of a 0.66 pound extruded DU projectile, alloyed with 0.75 weight percent titanium, encased in a 0.8 mm-thick aluminum shell and windscreen.

**Byproduct Material**—Radioactive material (except Source and Special Nuclear Material) yielded in or made radioactive by exposure to radiation, incident to the process of producing or using Source or Special (SS) Nuclear Material.

**Certificate of Clearance**—This is the official document verifying that the cleared rangeland is carefully searched and cleared. It certifies removal of all dangerous and explosive materials reasonably possible to detect. The certificate is dated, and a range residue clearance/ decontamination report is attached. The decontaminated areas identified in red crosshatch on a map, and annotated in the map legend.

**Combat Mix (CM)**—A sequential mixture of DU and HEI rounds in which one HEI round, followed by five DU rounds, are fired by the AN/GAU-8 Gatling gun.

**Comprehensive Planning**—The ongoing, iterative, participatory process addressing the full range of issues impacting or impacted by a range's development. Through this process, goals and objectives are defined, issues are identified, information is gathered, alternative solutions are developed, and a sound

decision-making process is employed to select a preferred alternative for implementation.

**Comprehensive Range Plan**—The totality of documents that provide a wide range of information necessary for decision making. It encompasses those specific documents determined to be essential for planning and managing a range's assets and operations.

**Controlled Firing Area (CFA)** —An area in which ordnance firing is conducted under controlled conditions so as to eliminate hazards to non-participating aircraft, and to ensure the safety of persons and property on the ground. Aeronautical charts do not depict CFAs.

**Controlling Agency** —Air Traffic Control (ATC) facility responsible for providing airborne control services in and around a designated airspace. With respect to a restricted area, the using agency may authorize transit through or flight within the restricted area according to a joint-use agreement.

**DoD Explosives Safety Board (DDESB)** —DoD organization charged with promulgation of ammunition and explosives safety policy and standards, and with reporting on effectiveness of the implementation of such policy and standards IAW DoD Directive 6055.9, *DoD Explosives Safety Board (DDESB) and DoD Component Explosives Safety Responsibilities*

**Depleted Uranium (DU)** —DU is Uranium ore processed to remove material useful for Nuclear reactor fuel and Nuclear weapons. Natural Uranium consists primarily of a mixture of two isotopes of uranium: Uranium-235 and Uranium-238, 0.7 and 99.3 percent, respectively. The resulting Uranium-238 is Depleted Uranium, which is 0.7 times as radioactive as Natural Uranium. DU is a dense, heavy metal with a limited health hazard, and has two properties that make it ideal for military applications: extreme density and its surface ignites on impact (especially with steel).

**Despecularization** —The removal of any highly reflective material such as glass or polished metal from Target Areas used as laser targets to prevent potential damaging reflections of the laser emissions. This will ensure that laser energy is safely contained within the laser safety footprint area.

**Emitter/Simulator** —Generic terms used to describe threat equipment operated at Electronic Combat Ranges (ECR) and Electronic Scoring Sites (ESS). However, ACC operates a variety of equipment including, but not limited to: Emitter only systems, Emitter-Receiver-Processors, and replica type systems. Carefully compare the similarities and features of different systems and consider operational requirements. Surface-to-Air Missile (SAM) and Anti-Aircraft Artillery (AAA) simulators include all manned and unmanned threat emitters.

**Environmental Impact Analysis Process (EIAP)** —The formal process, as outlined in the National Environmental Policy Act (NEPA), used to assess environmental impacts resulting from a proposed action.

**Explosive Ordnance Disposal (EOD)** —The detection, identification, on-site evaluation, rendering safe, recovery, and final disposal or unexploded explosive ordnance. It may also include explosive ordnance that has become hazardous by damage or deterioration.

**Government Controlled** —Control exercised by any agency of the federal government, not just USAF or DoD.

**Hazard Area** —The area of a range defined by a composite of all weapon safety footprints for all authorized weapon delivery events, against targets located in a given sub-range or target complex. They encompass Target Areas, but do not include them.

**SAFE-RANGE Program Methodology** —A systematic procedure for applying training weapon safety

footprints to perform a quantitative risk assessment of aircraft ordnance deliveries.

**Isotope**—Nuclides having the same number of protons in their nuclei, and hence the same atomic number, but differing in the number of neutrons, and therefore in the mass number. Almost identical chemical properties exist between isotopes of a particular element.

**Joint Use**—With respect to ranges, Joint Use means other MAJCOMs or services may use, as long as they conduct operations IAW this instruction, as supplemented. With respect to range airspace, it means the use by civil or other military aviation when it is not active.

**License**—Nuclear Regulatory Commission (NRC) written authorization delegating regulatory authority to receive, possess, use, or transfer Byproduct, Source, or Special Nuclear Material.

**Major Command (MAJCOM)**—A major subdivision of USAF assigned a major part of the Air Force mission. Major commands report directly to Headquarters United States Air Force (HQ USAF). The ANGRC/DO serves as the MAJCOM for Air National Guard ranges.

**Military Operations Area (MOA)**—Special Use Airspace allocated to the military to separate/segregate certain military activities from Instrument Flight Rules (IFR) traffic, and to identify the location of these military activities to Visual Flight Rules (VFR) traffic. VFR aircraft are not restricted from transiting MOAs.

**Major Range and Test Facility Base (MRTFB)**—The MRTFB is an installation with organizations operated by the Services principally to provide T&E support to defense acquisition programs.

**Military Training Route (MTR)**—A low-level, high-speed training route established IAW criteria in FAA Handbook 7610.4, *Special Military Operations*. MTRs are used by DoD to conduct low altitude navigation and tactical training, in instrument and visual weather conditions, below an altitude of 10,000 feet MSL and at airspeeds more than 250 KIAS. Routes are established as IFR routes (IR) or VFR routes (VR). The FAA has approval authority to implement IRs and the appropriate MAJCOM approves VR implementation. Environmental documentation is required for implementation IAW AFI 32-7061. VRs are processed through the FAA via the AFREP. MTRs are published in FLIP AP/1B and charted on FAA Sectionals and DoD Low IFR charts. AFREPs assign all route numbers.

**Naturally Occurring Radioactive Material**—Radioactive material that occurs in nature such as, Carbon-14, Radium-226, Thorium-232, Uranium-238, etc.

## **Ordnance**

### **Training:**

**Boosted Munitions (forward firing)**—Munitions such as the AGM-65 Maverick missile and the 2.75 folding fin rocket driven by propellant.

**Full-scale Inert**—Concrete-filled training bombs that match the full size and weight of the actual bomb. These bombs contain no explosives, pyrotechnics, or chemical agents.

**Practice Bombs**—Practice bombs may be full scale or miniature. Some practice bombs contain a small explosive charge or pyrotechnic that marks the point of impact with a small cloud of smoke or flash. For example, BDU-33 practice bombs contain a MK 4 spotting charge, and MK 82 practice bombs may contain 6.25 pounds of composition C-4 high explosive. British 1,000-pound class practice bombs may contain 50 pounds of TORPEX. These bombs normally use a fuse to initiate the high explosive fillers.

**Training Projectile (TP)**—Ammunition Ball projectile gun ammunition that has no explosive in the projectile.

**Live Munitions**—Munitions containing a fuse and high explosive material designed to detonate either prior to or upon impact with the Target Area. Munitions range from bombs, to missiles, rockets, and bullets.

**Penetrator** —Dense projectile component of ammunition round designed to pierce armor.

**Permit** —US Air Force or US Navy Radioactive Material Permit issued to a unit with the respective service, under the authority of that Service's Master Materials License.

**Product Improvement Working Group (PIWG)** —A number of individuals, representing aerospace equipment users and single managers, assembled together for the purpose of product improvement.

**Program Objective Memorandum** —A biennial memorandum submitted to the Secretary of Defense (SECDEF) from Military Department and Defense agency. It proposes total program requirements for the next six years. It includes rationale for planned changes from the approved Future Years Defense Program (FYDP) baseline within fiscal guidance issued by the SECDEF.

**Prohibited Area** —A specified area over the land of a state, or territorial waters adjacent thereto, within which the flight of aircraft is prohibited in the interest of national security and welfare.

**Proponent** —Any office, unit, or activity that proposes to initiate an action.

**Radar Bomb Scoring (RBS) System** —ECR/ESS equipment used to provide no-drop bomb scoring.

**Radiation** —The emissions, either electromagnetic or particulate, resulting from the transformation of an unstable atom or nucleus.

**Radiation Safety Officer** —An individual, designated by a Commander or the Air Force Radioisotope Committee, who has the specific education, military training, and professional experience in radiation protection practice, to manage radiation safety activities covered by a USAF Radioactive Material Permit.

**Radioactive Material** —Material whose nuclei, because of their unstable nature, decay by emission of ionizing radiation. The radiation emitted may be alpha or beta particles, gamma or X-rays, or neutrons.

**Range-Active** —A military range that is currently in service and is being regularly used for range activities.

**Range-ANG** —For ANG ranges, the term range pertains to all buildings and property that is established by the lease, license, permit or other written agreement, for either exclusive or joint use by the ANG for weapons delivery operations.

**Range-Inactive** —A military range that is not currently being used, but that is still considered by the military to be a potential range area, and that has not been put to a new use incompatible with range activities.

**Range-Military** —Designated land, and water areas set aside, managed, and used to research, develop, test, and evaluate military munitions, other ordnance, or weapons systems, or to train military personnel in their use and handling. Ranges include firing lines and positions, maneuver areas, firing lanes, test pads, detonation pads, Target Areas, and Hazard areas. It includes the airspace above the range.

**Range Control Officer (RCO)** —The person responsible for range operations and safety. Except in situations where the RCO delegates weapons release clearance to a qualified flight lead, individual pilot



or Forward Air Controller, or other briefed person.

**Range Operating Agency (ROA)** —The agency designated to operate and maintain the range. The ROA may delegate the daily scheduling, management, and maintenance of the range to any appropriate subordinate unit.

**Range Operations Officer (ROO)** —The individual responsible for all range maintenance and day-to-day operating activities. The ROO interfaces with operations personnel and other base agencies. For matters of safety, the ROO will be subordinate to the RCO during aircraft operations on the range. The ROO will be qualified as a RCO. For ANG ranges, as assigned by range CC/OIC.

**Range Residue** —Material including, but not limited to: practice bombs; expended artillery; small arms and mortar projectiles; bombs and missiles; rockets and rocket motors; hard targets; grenades; incendiary devices; experimental items; demolition devices; berms; and any other material fired on, or upon a military range.

**Range Residue Clearance Report** —It is a narrative statement about the residue clearance of a range, and serves as a factual record of the residue clearance. Also known as a Report of Clearance, it is not a Certificate of Clearance.

**Range Service:**

**Class A**—Range is manned, has a ground-based scoring capability, and has a Range Control Officer (RCO) on the ground who controls aircraft using the range.

**Class B**—Range is either manned or unmanned, has a ground-based scoring capability, but does not have a RCO on the ground controlling aircraft. The flight lead, individual pilot, FAC, or other briefed person performs the RCO function.

**Class C**—Range is unmanned, with no scoring or aircraft control from the ground. The flight lead, individual pilot, FAC, or other briefed person performs the RCO function.

**Class D**—An instrumented air-to-air range. It is manned by a Range Training Officer (RTO) who maintains radio contact with aircraft on the range during air combat training as required.

**Range Training Officer (RTO)** —The person responsible for monitoring ACMI/ACTS, passing kill removal, and providing debriefs. The RTO will establish communications with aircraft entering the range.

**Residue Clearance** —The removal or disposal of unexploded ordnance, classified ordnance, inert ordnance residue, training projectile debris, and other debris.

**Restricted Area:—**

An area (land, sea or air) in which there are special restrictive measures employed to prevent or minimize interference between friendly forces or an area under military jurisdiction in which special security measures are employed to prevent unauthorized entry.

Airspace where the flight of aircraft, while not wholly prohibited, is subject to restriction. When not activated by the using agency, the controlling ATC facility may authorize IFR or VFR operations in the area. If joint use is authorized, the name of the ATC controlling facility is annotated on the map.

An area that must contain all "Hazardous Activity" as defined by branch of service for specific type of aircraft using the range.

**Restrictive Safety Easement** —An agreement whereby USAF purchases the right to place restrictions on types and/or times of the landowner use.

**Range Integration Instrumentation System (RIIS)** —The primary mission of the RIIS is to support the ACC policy of sustained combat readiness by providing feedback in the form of graphic debriefing products. RIIS integrates all ESSs as well as some ECRs.

**SAFE-RANGE Program Methodology** —A systematic procedure for applying weapon safety footprints to perform a quantitative risk assessment of aircraft ordnance deliveries.

**Scheduling Authority** —The agency, organization or military activity responsible for scheduling all activities in designated land and airspace areas.

**Scoping** —A public process for proposing alternatives to be addressed and for identifying significant issues related to a proposed action.

**Shared Use** —When participating (as defined by the using agency) and non- participating (civil or military) users share designated land and/or airspace areas on a noninterference basis.

**Sortie** —A term to describe a single training event performed by one aircraft from takeoff through landing. A single aircraft may only log one sortie per flight.

**Sortie Operation** —A term to define the use of training airspace or ranges by a single aircraft. A single aircraft may log multiple sortie operations per flight by using different training areas or the same area several times throughout the same flight.

**Special Use Airspace (SUA)** —Airspace of defined vertical and lateral dimensions wherein activities are confined. Certain limitations or restrictions may be imposed on non-participating aircraft. Except for Controlled Firing Areas, SUA is depicted on aeronautical charts. Types of Special Use Airspace include:

*Alert Area.*

*Controlled Firing Area.*

*Military Operations Area.*

*Prohibited Area.*

*Restricted Area.*

*Warning Area.*

**Target Area** —Target Area is the area on a range complex that immediately surrounds the target or designated mean point of impact. The Target Area demarcation should normally be no less than 1000 feet from the center of the target or designated mean point of impact.

**Unexploded Ordnance (UXO)** —Explosive ordnance that has been primed, fused, armed, or otherwise prepared for action, and then fired, dropped, launched, projected or placed in such a manner as to constitute a hazard to operations, installations, materials, or personnel and remains unexploded either by malfunction or design or for any other cause.

**US Air Force Master Materials License** —The Nuclear Regulatory Commission License issued to the US Air Force Radioisotope Committee. The Master Materials License delegates to USAF regulatory authority over Byproduct, Source, and limited quantities of Special Nuclear Material.

**US Air Force Radioactive Material Permit** —Written authorization from the US Air Force Radioisotope Committee allowing USAF organizations to receive, possess, distribute, use, transfer, or dispose of radioactive materials.

**US Air Force Radioisotope Committee (RIC, The Committee)** —A committee established according to, and the named licensee on USAF Master Materials License. RIC coordinates the regulatory and administrative aspects of licensing, possessing, distributing, using, transferring, transporting, and disposing of all radioactive material in the Air Force. RIC does not have regulatory authority over radioactive material transferred from the Department of Energy to the Department of Defense inside Nuclear weapons systems, certain components of weapons systems and Nuclear reactor systems, and components and fuel controlled under Section 91B of the Atomic Energy Act (AEA).

**Warning Area:—**

A specified area above, below, or within which there may be potential danger.

Airspace of defined dimensions over international waters that contain activity that may be hazardous to non-participating aircraft.

An area that must contain all "Hazardous Activity" as defined by branch of service for specific type of aircraft using the range.

**Weapon Safety Footprint Area** —A closed contour that defines the land area containing 99.99 percent (at a 95 percent confidence level) of all initial impacts and ricochets, resulting from the release of a specified weapon type during air-to-surface weapon delivery events.

**Attachment 1 (AFSPC)****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References******Legislative***

18 U.S.C. 1367, *Interference with the Operation of a Satellite*

***US Government Agency Publications***

DoD Instruction 3100.11(S), *Illumination of Objects in Space by Lasers (U)*

DoD Instruction S-3100.15(S), *Space Control (U)*

***Air Force Publications***

AFI 10-601, *Mission Needs and Operational Requirements Guidance and Procedures*

AFI 10-707, AFSPC Supplement 1, *Spectrum Interference Resolution Program*

AFMAN 23-110, *USAF Supply Manual*

AFI 51-503, *Aerospace Accident Investigations*

AFSPCHOI 91-1, *Mishap Review Panel*

AFI 91-204, AFSPC Supplement 1, *Safety Investigations and Reports*

AFSPCI (TBD), *Counterspace Activity Approval Package Instruction*

***Abbreviations and Acronyms***

**AFSPC**—Air Force Space Command

**CAAP**—Counterspace Activity Approval Package

**MMSOC**—Multi-mission Space Operation Center

**OL**—Operating Location

**SOCTF**—Space Operations Combined Task Force

**STTR**—Space Test and Training Range

**SWC**—Space Warfare Center

## Attachment 2

### RANGE PERSONNEL TRAINING

**A2.1. Range Personnel Training.** The ROA will establish a training program for all personnel assigned to a range IAW MAJCOM supplements. The ROA will annually review all training records. The following is a general guide for range personnel training requirements.

A2.1.1. Range Operations Officer Training. The ROA will ensure the ROO is fully trained IAW MAJCOM supplements before assuming ROO duties.

A2.1.1.1. ROO Training. As a minimum, the ROO should be trained in or demonstrate adequate knowledge of the following publications or subjects:

A2.1.1.1.1. Wing scheduling.

A2.1.1.1.2. QAE/Contractor training. (N/A for ANG)

A2.1.1.1.3. Unit Level On-Scene Mishap Investigation Commander.

A2.1.1.1.4. NEPA training.

A2.1.1.1.5. Risk Communication training.

A2.1.1.1.6. AFI 11-202, Volume 3, *General Flight Rules*.

A2.1.1.1.7. AFI 11-214, *Aircrew, Weapons Director, and Terminal Attack Controller Procedures for Air Operations*.

A2.1.1.1.8. Aircraft specific AFI 11-XXX series.

A2.1.1.1.9. AFI 13-212, Volume 1, *Range Planning and Operations*, Volume 2, *Range Construction and Maintenance*, and Volume 3, *SAFE-RANGE Program Methodology*, as supplemented.

A2.1.1.1.10. Intermediate command instructions and manuals applicable to range “operations”.

A2.1.1.1.11. RCO authority and responsibilities.

A2.1.1.1.12. Range Utilization Report/Range record keeping.

A2.1.1.1.13. EOD briefing on the proper handling of training munitions.

A2.1.1.1.14. USO or designated LSO training.

A2.1.1.1.15. SAFE-RANGE Program training.

A2.1.1.1.16. Proper use and handling of applicable ground launched visual threats.

A2.1.2. Range Control Officer Training. The ROO will ensure each RCO is fully trained IAW MAJCOM supplements before assuming RCO duties.

A2.1.2.1. RCO Training. As a minimum, the RCO should be trained in or demonstrate adequate knowledge of the following publications or subjects:

A2.1.2.1.1. Wing scheduling.

A2.1.2.1.2. Unit Level On-Scene Mishap Investigation Commander.

A2.1.2.1.3. Public Affairs training.

A2.1.2.1.4. AFI 11-202, Volume 3, *General Flight Rules*.

A2.1.2.1.5. AFI 11-214, *Aircrew, Weapons Director, and Terminal Attack Controller Procedures for Air Operations*.

A2.1.2.1.6. Aircraft specific AFI 11-XXX series.

A2.1.2.1.7. AFI 13-212, Volume 1, *Range Planning and Operations*, Volume 2, *Range Construction and Maintenance*, and Volume 3, *SAFE-RANGE Program Methodology*, as supplemented.

A2.1.2.1.8. Intermediate command instructions and manuals applicable to range “operations”.

A2.1.2.1.9. RCO authority and responsibilities.

A2.1.2.1.10. Day/night aircraft ordnance delivery patterns for all aircraft using the range.

A2.1.2.1.11. Required weather minimums for each event.

A2.1.2.1.12. Foul criteria.

A2.1.2.1.13. Communications procedures.

A2.1.2.1.14. Capabilities and limitations of range facilities.

A2.1.2.1.15. Hazard Areas, pattern safety, weapon safety footprints, and overall range safety.

A2.1.2.1.16. Range Utilization Report/Range record keeping.

A2.1.2.1.17. EOD briefing on the proper handling of training munitions.

A2.1.2.1.18. Night operations, and NVD use (if applicable).

A2.1.2.1.19. Proper use and handling of applicable ground launched visual threats.

A2.1.2.2. On-range Training. A qualified RCO/ROO will supervise on-range RCO training. The ROA will develop a checklist to ensure complete and professional training. Emphasize the use of sound judgment and common sense while controlling both aircraft and personnel during range operations. The on-range training should include the following items as a minimum:

A2.1.2.2.1. Range Hazard Areas.

A2.1.2.2.2. Inspection of strafe Target Areas.

A2.1.2.2.3. Fire fighting equipment and procedures.

A2.1.2.2.4. Crash/rescue procedures.

A2.1.2.2.5. Evacuation of injured personnel.

A2.1.2.2.6. Traffic conflict with other ranges in the area.

A2.1.2.2.7. Range pattern spacing.

A2.1.2.2.8. Minimum altitude measuring devices.

A2.1.2.2.9. Cease fire distance estimation for low angle strafe.

A2.1.2.2.10. Foul criteria and procedures.

- A2.1.2.2.11. Bomb plotting and electronic strafe scoring equipment.
- A2.1.2.2.12. Radio, other communications, and tape recorder operation.
- A2.1.2.2.13. Lost communications procedures.
- A2.1.2.2.14. Overall range safety.
- A2.1.2.2.15. Night, laser, and tactical range operations (if applicable).
- A2.1.2.2.16. Training Weapon Safety Footprint application/SAFE-RANGE Program.
- A2.1.2.2.17. Proper use and handling of applicable ground launched visual threats.

A2.1.3. Range Training Officer (RTO) Training. The ROA will ensure each RTO is fully trained IAW MAJCOM supplements before assuming RTO duties.

A2.1.3.1. RTO Training. As a minimum, the RTO should be trained in or demonstrate adequate knowledge of the following publications or subjects:

- A2.1.3.1.1. AFI 11-202, Volume 3, *General Flight Rules*.
- A2.1.3.1.2. AFI 11-214, *Aircrew, Weapons Director, and Terminal Attack Controller Procedures for Air Operations*.
- A2.1.3.1.3. Aircraft specific AFI 11-XXX series.
- A2.1.3.1.4. AFI 13-212, Volume 1, *Range Planning and Operations*, Volume 2, *Range Construction and Maintenance*, and Volume 3, *SAFE-RANGE Program Methodology*, as supplemented.
- A2.1.3.1.5. Intermediate command instructions and manuals applicable to range “operations”.
- A2.1.3.1.6. RTO authority and responsibilities.
- A2.1.3.1.7. Capabilities and limitations of ACTS facilities.
- A2.1.3.1.8. Range safety.

A2.1.4. Range Personnel Training. The ROO will ensure all O&M contractor and USAF personnel are fully trained IAW MAJCOM supplements before assuming range duties. The ROA will develop range O&M contractor and USAF personnel training curriculum and maintain record folders reflecting the training. Training should include local range operating procedures, maintenance requirements, and safety. The following subject areas should be developed for local conditions:

- A2.1.4.1. Local range operating procedures.
- A2.1.4.2. Maintenance procedures and issues.
- A2.1.4.3. Hazardous Materials/Hazardous Waste and local environmental procedures.
- A2.1.4.4. Poisonous or dangerous fauna and flora.
- A2.1.4.5. Local weather hazards.
- A2.1.4.6. Fire fighting support procedures.
- A2.1.4.7. Aircraft crash procedures.
- A2.1.4.8. Local safety, emergency, and contingency procedures.

A2.1.4.9. Basic first aid procedures.

A2.1.4.10. Explosive and other ordnance hazards (EOD briefing).

A2.1.4.11. Range access control and security procedures.



### Attachment 3

## RANGE UTILIZATION REPORT

**A3.1. Report Content.** MAJCOMs will ensure their ROAs compile quarterly range utilization reports as outlined below and maintain a three-year historical record of these reports.

A3.1.1. Report Control Symbol. Provided by the MAJCOM.

A3.1.2. Report Period. Calculate monthly, and forward range utilization data quarterly.

A3.1.3. Sortie Operations. Number of aircraft using the range, listed by Wing/Unit designation and aircraft type/model. Report this data in a monthly format within the quarterly report.

A3.1.4. Range and Equipment Identification. Include range, sub-range, equipment name, and normal hours of operation.

A3.1.5. Minimum Report Contents (reported on a monthly basis):

A3.1.5.1. Normal Gross Range/Equipment Hours [A]. For Service Class A ranges, the total number of shift hours planned per day multiplied by the number of days the range was open in the quarter. If the range is manned by contractors, this is the number of daily shift hours specified in the contract multiplied by the number of days the range was open in the quarter. If military personnel man the range, use the daily shift hours multiplied as above. For Service Class B and C ranges (non-staffed), Gross Range/Equipment Hours will be equal to the published range operating hours or total time equipment could have supported the primary mission. The total of [B], [E], [F], [G], [H] (and in some cases [J]) and [K] must equal Gross Range Hours [A]. Does not include overtime hours, which are reported in [I].

A3.1.5.2. Range Set-up and Shutdown Hours [B]. This is equal to the number of hours daily multiplied by the number of duty days in the quarter that are needed to set-up and shutdown a Service Class A range. Measure range set-up time from the beginning of the shift to the time the range is declared open. Measure shutdown hours from the time the range is declared closed to the end of the shift.

A3.1.5.3. Operating Hours [C]. Equal to [A] minus [B]. Normally equals published range operating hours.

A3.1.5.4. Overtime Hours [D]. Those hours in excess of shift/contract hours needed to support traditional test and training requirements.

A3.1.5.5. Range Maintenance Closure Hours [E]. The total time the range was not available during operating hours due to either scheduled or unscheduled maintenance/ clearance. "Opportune" maintenance performed during an inactive period that would not be an impact as long as at least 15 minutes prior notice was given. Do not account for opportune range maintenance here.

A3.1.5.6. Range Weather Closure Hours [F]. The total time the range was not available during operating hours to be scheduled or used for primary mission due to poor weather at the range. No-shows, or cancellations caused by poor weather elsewhere or aircraft aborts, while the range weather was satisfactory, will be logged as a short-notice cancellation. If range weather and maintenance factors were concurrent, only maintenance will be logged.

A3.1.5.7. Short Notice Operations Cancellation [G]. The total time the range was scheduled but the originally scheduled user did not show up because of user attrition (ground abort, base weather, etc.), short-notice mission changes, schedules change, OPS/HHQ cancels, etc. The MAJCOMs/ROAs will publish in its supplement to AFI 13-212 the latest time that a schedule change can be made without classifying it as a short-notice cancellation.

A3.1.5.8. Range Hours Used [H]. Report the total time expended in support of all users during shift/contract hours (in hours and tenths of hours). When two or more activities or flying units use the range/resource simultaneously, identify time of all users. MAJCOMs/ROAs will develop use categories to account for traditional uses, VIP visits, inspections, shared use, or other authorized activities for which the range was manned and/or used.

A3.1.5.9. Additional Hours Used Outside Normal Operating Hours [I]. This factor accounts for uses of the range in excess of shift/contract hours. MAJCOMs/ROAs will develop categories within this factor to account for: Special Forces training; range airspace turned over to the FAA for their use; hunting; wildlife; environmental and cultural surveys (to include Bureau of Land Management and US Fish and Wildlife Service); mineral and natural gas exploration; and other non-traditional uses.

A3.1.5.10. Range Hours Precluded [J]. The total time the range was not available during normal operating hours due to other reasons. MAJCOMs/ROAs will develop range hours precluded categories. Examples of precluded categories are: encroachments/use by higher priority programs or agencies (testing, ranges managed by other Services, etc.); power failures; accident investigations; fire hazards; forestry, fish, and wildlife surveys; air traffic control; or other activities that prevent use of the range or restricted airspace during normal operating hours.

A3.1.5.11. No Utilization or No Requirement [K]. That portion of capacity not reported as normal range hours used, maintenance, weather, precluded, or other use. Within this category break out separately:

A3.1.5.11.1. Opportune Maintenance Time [K1]. These are hours where the range was open, there was no mission utilization, but maintenance was performed. K1 is a subset of K.

A3.1.5.12. Normal Net Capacity [L]. [A] minus ([B], [E], [F], [J]) or [G]+[H]+[K]. Normal capacity does not include overtime hours that are reported in [I].

A3.1.5.13. Normal Use Rate [M]. Calculate the normal (does not include overtime hours these are reported in [I]) use rate as the sum of [G] and [H] divided by [L] multiplied by one hundred. This is equal to  $(G+H)/L * 100$  or  $(G+H)/(G+H+K) * 100$ .

A3.1.5.14. User Identification and Support Hours [N]. User name (include wing/unit, service (AF, Navy, etc.), and installation) and the time expended in support of each user.

A3.1.5.15. Comments [O]. As required to explain factors, categories or special circumstances.

**A3.2. Report Format.** Each MAJCOM/ROA will compile the data in an Excel spreadsheet or web-based format. The MAJCOMs/ROAs may add additional data requirements, as required. Data collection and transmission from field to MAJCOM may be automated or via the web. An example format follows:

A3.2.1. Range Utilization Report.

A3.2.2. Report Control Symbol.

A3.2.3. Report Period.

A3.2.4. Sortie Operations.

A3.2.5. Range and Equipment Identification.

A3.2.6. Report Contents:

<u>Line</u>	<u>Item</u>
A	Normal Gross Range/Equipment Hours (B+E+F+G+H+J+K) Note: Does not include overtime hours, which are reported in [I]
B	Range Set-up and Shutdown Hours
C	Operating Hours (A-B)
D	Overtime Hours
E	Range Maintenance Closure Hours
F	Range Weather Closure Hours
G	Short Notice Operations Cancellation
H	Range Hours Used
I	Additional Hours Used Outside Normal Operating Hours
J	Range Hours Precluded
K	No Utilization or No Requirement
K1	Opportune Maintenance Time
L	Normal Net Capacity (A -(B+E+F+J)) or [G]+[H]+[K]
M	Normal Use Rate ((G+H)/L) * 100
N	User Identification and Support Hours
O	Comments

## Attachment 4 (Added-AFSPC)

## RANGE OPERATIONS OFFICER (ROO) DUTIES AND QUALIFICATIONS

## A4.1. (Added-AFSPC) Range Operations Officer (ROO).

Table A4.1. (Added-AFSPC) Range Operations Officer (ROO) Duties and Qualifications.

Duties and Qualifications	References
Will supervise daily range operations.	AFI 13-212V1, para <a href="#">2.7.10.</a>
Will supervise daily range planning.	AFI 13-212V1, para <a href="#">2.7.10.</a>
Will supervise daily range maintenance.	AFI 13-212V1, para <a href="#">2.7.10.</a>
Has authority over all space operations and support functions on the range.	AFI 13-212V1, para <a href="#">2.7.10.</a>
Has authority over all space operations and support functions for the STTR.	AFI 13-212V1_AFSPC SUP 1, para <a href="#">2.7.10.1. (Added-AFSPC)</a>
The ROO will serve as the central focal point for operational requirements and safety.	AFI 13-212V1_AFSPC SUP 1, para <a href="#">2.7.10.1. (Added-AFSPC)</a>
Will be responsible for all range maintenance and day-to-day operating activities.	AFI 13-212V1, <a href="#">Attachment 1 (AFSPC) (Terms)</a> , Range Operations Officer
The ROO will interface with operations personnel and other base agencies.	AFI 13-212V1, <a href="#">Attachment 1 (AFSPC) (Terms)</a> , Range Operations Officer
Will be qualified as a RCO.	AFI 13-212V1, <a href="#">Attachment 1 (AFSPC) (Terms)</a> , Range Operations Officer
Will be subordinate to the RCO during live-fire operations on the range for matters of safety.	AFI 13-212V1, <a href="#">Attachment 1 (AFSPC) (Terms)</a> , Range Operations Officer